# TABLE OF CONTENTS

Questions and Answers about *ARDA* ..... *i*
User's Guide to *ARDA* Citations ..... *ii*

*Item numbers* *page*

General Development

Development Assistance ..... 001-015 1
Women in Development ..... 016-021 5
Economics ..... 022-040 8

Agriculture

General ..... 041-063 14
Plant Science ..... 064-067 20
Soil Science and Fertilizer ..... 068-072 21
Irrigation and On-Farm Water Management ..... 073-076 23
Livestock and Range Management ..... 077-079 24
Aquaculture ..... 080-084 25
Food and Nutrition ..... 085-094 27

Health

Health Care ..... 095-101 30
Water Supply and Health ..... 102-106 31
Population ..... 107-112 34
Human Settlements ..... 113-116 36

Environment and Natural Resources

General ..... 117-125 37
Forestry ..... 126-132 39
Energy ..... 133-139 42
Education ..... 140-144 44
Technology ..... 145-150 46
Subject and Geographic Index ..... 48
Author and Institution Index ..... 51
Contract/Grant Index ..... 53
Document Number Index ..... 54
Ordering Instructions ..... 55
Order Form ..... 56

*ARDA* is published quarterly by the
United States Agency for International Development
Washington, D.C.

## QUESTIONS AND ANSWERS ABOUT *ARDA*

| | |
|---|---|
| **What is *ARDA*?** | *ARDA*, "A.I.D. Research and Development Abstracts", is a quarterly abstract journal issued by the Division of Development Information, Center for Development Information and Evaluation, Bureau for Program and Policy Coordination. |
| **What is the goal of *ARDA*?** | The goal of *ARDA* is to transfer development and technical information to active practitioners in development assistance. |
| **For whom is *ARDA* published?** | *ARDA*'s target audience is A.I.D. staff world wide and selected key institutions in developing countries. Such institiutions are government agencies, universities, libraries, research organizations, and other public and private sector organizations. |
| **What material are abstracted in *ARDA*?** | *ARDA* presents abstracts of AID-funded current and less recent research studies, state-of-the-art reports, sector analyses, special evaluations, and other documents which, taken together, describe a broad spectrum of international development experience. |
| **To whom do I address additional questions regarding *ARDA*?** | Please direct all correspondence and requests for further information to:<br>Editor of *ARDA*<br>PPC/CDIE/DI<br>Agency for International Development<br>Washington, D.C. 20523<br>U.S.A. |

## QUESTIONS ET REPONSES RELATIVES A *ARDA*

| | |
|---|---|
| **Qu'est-ce qu'*ARDA*?** | *ARDA*, "A.I.D. Research and Development Abstracts", (Résumés sur la recherche et le développement de l'Agence pour le Développement International), est une revue trimestrielle composée de résumes publiée par la Division de l'Information sur le Développement, Centre d'Information et Dévaluation du Développement, Bureau de Coordination de Programmes et Politiques. |
| **Quel est l'objectif d'*ARDA*?** | Le but d'*ARDA* est de transmettre des informations techniques sur le developpement à ceux qui prêtent assistance au développement. |
| **A qui s'adresse *ARDA*?** | *ARDA*'s s'adresse au personnel d'A.I.D. dans le monde entier et à certaines institutions clés situées dans les pays en voie de développement. Ces institutions comprennent des agences de gouvernement, des universités, des bibliothèques, des organisations de recherche, et d'autres organisations dan les secteurs publics et privés. |
| **Que contiennent les résumés d'*ARDA*?** | *ARDA* présente des résumés des recherches actuelles et moins récentes financées par A.I.D., des rapports sur l'état actuel du développement, des analyses de différents domaines, des évaluations spéciales, et d'autres documents. Le tout ensemble décrivent une vaste étendue d'expériences dans le domaine du développement international. |
| **A qui est-ce qu'il faut poser des questions supplementaires au sujet d'*ARDA*?** | Veuillez envoyer toute correspondance et toute demande de plus amples renseignements à:<br>Editor of *ARDA*<br>PPC/CDIE/DI<br>Agency for International Development<br>Washington, D.C. 20523<br>U.S.A. |

## PREGUNTAS Y REPUESTAS SOBRE *ARDA*

| | |
|---|---|
| **¿Que es *ARDA*?** | *ARDA*, "A.I.D. Research and Development Abstracts", (Sumarios de investigación y Desarrollo de A.I.D.) es un jornal que sale quatro veces al ano, publicado por la División de Información sobre el Desarrollo, Centro de Información y Devaluación del Desarrollo, Departmento de Coordinación de Programas y Politicas. |
| **¿Cual es el objetivo de *ARDA*?** | El objetivo de *ARDA* es comunicar información técnica y sobre el desarrollo a los participantes activos en las actividades del desarrollo. |
| **¿Para quien se publica *ARDA*?** | *ARDA* se dirige al personal mundial de A.I.D. y a las seleccionadas institutiones claves de los paises endesarrollo. Tales institutiones cuentan con agencias de gobierno, universidades, bibliotecas, organizaciones de investigación, y otras organizaciones de los sectores público y privado. |
| **¿Que contienen los informes de *ARDA*?** | *ARDA* presenta resumenes de estudios actuales y menos recientes financiados por A.I.D. relativos a la investigación, de informes sobre el estado del arte, de analisis de sectores, de evaluaciones especiales, y de otros documentos, los que todos juntos describen un panorama extensivo de experiencias dentro del dominio del desarrollo internacional. |
| **¿A quien se dirigen preguntas adicionales sobre *ARDA*?** | Sirvase remitir toda la correspondencia y los pedidos de mas información a:<br>Editor of *ARDA*<br>PPC/CDIE/DI<br>Agency for International Development<br>Washington, D.C. 20523<br>U.S.A. |

# USER'S GUIDE
# TO *ARDA* CITATIONS

| | | |
|---|---|---|
| **Item number** | **101** **PN-AAK-592** | **Document number** |
| | **MF $3.24/PC $28.47** | **Microfiche/ Paper Copy prices** |
| **Title** | **Soybean seed quality and stand establishment; proceedings** | |
| **Author(s)** | Sinclair, J.B.; Jackobs, J.A. | |
| **Institution(s)** | University of Illinois at Urbana-Champaign. College of Agriculture. International Soybean Program | |
| **Meeting** | (Conference on Soybean Seed Quality and Stand Establishment, Colombo, LK, 25-31 Jan 1981) | |
| | *INTSOY series, no. 22*, 1982, xiii, 206 p., En | **Serial title and number, date, pagination, and language** |
| **Supplementary note(s)** | Published by University of Illinois at Urbana-Champaign<br>*Grant DAN-1406-G-00-10150-00* | **Publisher** |
| **Project number** | 93105600 | |
| **Contract/Grant** | AID/ta-C-1294 | |
| **Availability note** | **International Food Policy Research Institute, 1776 Massachusetts Avenue, NW, Washington, D.C. 20036 USA* | |

**Abstract**

Soybean research has shown that both physical and biological factors are responsible for reduced seed quality and vigor, that stand establishment depends on seed quality, and that seed quality is directly influenced by weather conditions during seed maturation and harvest and by subsequent storage conditions. Because knowledge of these facts remains largely fragmented and is not being communicated to farmers, the International Soybean Program (INTSOY) hosted an international conference in Sri Lanka for research scientists and extensionists to correlate current knowledge on soybean seed quality and stand establishment, discuss ways to communicate this knowledge to farmers, and determine future research needs.

The conference proceedings presented in this volume include: (1) 19 invited papers and abstracts of 13 volunteered papers on soybean seed maturation, genetic differences in seeds, the effect of weather, harvesting and planting procedures, and the role of insects and pathogens; (2) 11 country reports from various Asian nations; and (3) reports from three working committees on soybean production, crop protection, and storage and mechanization.

In the plenary sessions, the speakers voiced a number of proposals on what emerged as a major concern among the delegates—the importance of seed quality in expanding soybean production in tropical and semi-tropical areas. Pointed out in particular was the complexity of soybean seed production in the tropics and semi-tropics due to the high humidity and temperature levels that prevail throughout the year. Other themes sounded were the necessity for good seed to make soybean an economical crop and the nutritional importance of soybeans.

All information presented during the conference related to seed production, technology, and storage and to seed certification in tropical and semi-tropical developing countries. Such information is directly related not only to INTSOY goals, but to complementary efforts of other international donors such as the Food and Agriculture Organization's ongoing Regional Field Food Crops project in North Africa and the Middle East.

**To facilitate rapid and accurate processing of your requests for documents from this issue of *ARDA*, please observe closely the ordering instructions found on the page following the last abstract.**

# GENERAL DEVELOPMENT

**001** **PD-AAR-663**

**MF $2.16/PC $25.35**

### Lessons learned from AID program experience in FY 1984 : a review of the year's project evaluation and audit reports, world - wide

Development Associates, Inc.; U.S. Agency for International Development. Bureau for Program and Policy Coordination. Center for Development Information and Evaluation
3 Aug 1985, vii, 141p. + 5 appendices : En
*Work order no. 22*
PDC-0000-I-22-3077-00

An analysis of 263 evaluation and of 45 Inspector General audit reports provides the basis for this review of the lessons learned from A.I.D.'s FY84 program experience.

Both evaluation and audit reports focused on five issues. Key finding are as follows. (1) Most projects have been responsive to host government, country development, and U.S. needs. However, some have been incompatible with cultural and ethnic factors (factors sometimes unseen even by host governments); thus projects with national scope may be ineffective in important geocultural regions of a country. (2) Institution building is widely viewed by USAID personnel and increasingly by contractors as A.I.D.'s core function, and A.I.D. staff have become skilled in developing host country capabilities. (3) Project design and monitoring systems are highly professional and in many respects effective, but have impeded full realization of institution building and timely goal achievement; management and administrative problems from overall direction to logistics and finance have impeded project objectives. (4) Sustainability has been inadequately emphasized.

(5) The effectiveness of technology transfer has been mixed. Agriculture has posed the most serious problem, as many projects to raise small farm productivity are falling short of goals, in most cases because input delivery systems have not reached the great majority of rural families, but in some cases because farmers have rejected the new technologies. Delivery capabilities, technology acceptance, and community participation have been greater in health projects, but securing an acceptance of preventive medicine equivalent to that of curative services has proven difficult. Also, in each case where the installation of potable water systems was the project objective, successfully achieved, water consumption failed to increase. In a number of countries, family planning is enjoying levels of acceptance and participation similar to primary health services. Despite the superiority of new fuel-efficient stoves over traditional models, the new stoves have not yet been accepted, especially in African countries. Employment generation has not resulted from rural regional agro-industrial projects as expected.

**002** **PN-AAL-055**

**MF $1.08/PC $8.19**

### Private voluntary organizations and the promotion of small - scale enterprise

Hunt, Robert W.
U.S. Agency for International Development. Bureau for Food for Peace and Voluntary Assistance. Office of Private and Voluntary Cooperation
*AID evaluation special study, no.27*, Jul 1985, xii, 47p. : En

The role of private voluntary organizations (PVO's) in developing small-scale enterprises (SSE's) is reviewed in this report, prepared for a Fall 1983 workshop on the subject.

The literature shows that SSE's can be successfully promoted through credit, technical assistance, and short-term training. However, it is small-or medium-sized manufacturing firms rather than microenterprises and trading businesses that seem to generate new employment and establish links to other economic sectors. For this reason, critics question the cost-effectiveness of SSE projects by PVO's, which focus increasingly on generating empowerment and equity among the poor. Such questions indicate the need for a systems approach to SSE development, i.e., one that embraces all relevant factors and institutions.

Several AID-sponsored SSE projects conducted by PVO's are enlightening in this regard. Two evaluations of entrepreneurship training programs of Opportunities Industrialization Centers International (OICI) indicate the value of a comprehensive institution-building effort. OICI's extensive efforts in establishing public and private sector advisory and policymaking bodies ensure the availability of expert advice and facilitate working relationships with the government, thus increasing the policy voice of local OIC's.

Other organizations, such as the Sarvodaya Shramadana in Sri Lanka, the Northeast Union of Assistance to Small Business (UNO) project in Brazil, the Partnership for Productivity project in Burkina Faso, and Manila Community Services, Inc. in the Philippines, are even more insistent on the importance of the social and political and not merely the economic concerns of SSE projects, both as outcomes to be pursued and as causes of project success. Rather than adopting a conventional, narrowly conceived cost-benefit approach, these organizations suit a project to the local situation in order to effect sustainable change benefiting the largest possible public. Such systems projects can be small and simple. The key factor is the entrepreneurial spirit that successful PVO's increasingly seem to be displaying in their SSE projects. A 5-page bibliography (1965-83) is appended.

**003** **PN-AAL-058**

**MF $1.08/PC $12.09**

### Evaluation guidelines for nonproject assistance : commodity import programs (CIP's) and CIP - like activities

Development Associates, Inc.; U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation
*AID program design and evaluation methodology report, no.4*, Aug 1985, viii, 54p. + 5 appendices : En
*Includes bibliography*
*Series formerly titled: AID program design and evaluation methods*

In response to suggestions from the General Accounting Office, this report presents A.I.D. management with guidelines for evaluating two types of nonproject assistance activities (that is, activities aimed at rapidly infusing foreign exchange or commodities into a nation's economy) - Commodity Import Programs (CIP's), which finance the foreign exchange costs of commodity procurement and shipping for developing countries, and CIP-like programs, such as agricultural development loans to provide for commodity imports established with Economic Support Fund or Development Assistance funding. The report, based on a review of past CIP evaluations by A.I.D. and the

# GENERAL DEVELOPMENT

World Bank, focuses on both the procedural and substantive aspects of evaluation.

Individual sections of the report treat: (1) the theory and practice of CIP and CIP-like programs; (2) the main areas of concern in evaluating these programs (program management, a consideration of particular importance in CIP programs; achievement of objectives; intended and unintended impacts within the recipient country; and lessons learned); (3) the evaluation scope of work; (4) preparatory work such as preparing data collection instruments, training interviewers, and interviewing U.S. officials in the host country; and (5) major issues affecting the program's economic impact (policy reform, the targeting of commodities and beneficiaries, foreign exchange rates, and local currency programming). Particular stress is laid on problems in tracing the end uses of A.I.D. resources and on ways evaluators can establish a causal link between A.I.D. assistance and various economic impacts (e.g., on selected economic sectors, on balance of payments, on equity, and on private firms). A presentation of indicators for measuring the program's effectiveness in key areas leads to some brief, concluding suggestions regarding the physical preparation of the report.

Appended are sample questionnaires, suggested outlines for a CIP evaluation report and for scopes of work for evaluating both a CIP and a CIP-like program, and a review of selected World Bank evaluation documents.

**004** **PN-AAL-061**

**MF $1.06/PC $9.36**

### Development management in Africa : the case of the land conservation and range development project in Lesotho

Warren, Marion; Honadle, George; et al.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Center for Development Information and Evaluation

*AID evaluation special study, no.31*, Dec 1985, xi, 16p. + 6 appendices: charts, maps, statistical tables, En

*Includes bibliography*

6320215

The Land Conservation and Range Development (LCRD) Project, begun in 1980, was designed to strengthen Lesotho's Ministry of Agriculture and arrest crop and range land degradation. To date, LCRD: (1) has established a prototype range management area (RMA) for applying improved livestock/range management methods; (2) is making a concerted effort within the RMA to introduce rotational grazing, controlled breeding, culling of less desirable animals, disease control, and marketing of livestock and livestock products; and (3) has established a livestock owners' grazing association (GA) to enforce RMA grazing regulations.

LCRD offers several lessons for development project management. (1) Training should be extended beyond government counterparts to participants – in LCRD, livestock owners and their herdboys – who can sustain project interventions. (2) Rigorous financial management may not be important determinants of project success. LCRD is meeting planned targets despite elementary bookkeeping. USAID is imposing rigorous financial management procedures on itself rather than on the project. (3) A project that introduces new resource management techniques must co-opt local authorities and yet relieve local organizations of responsibility for unpopular decisions. LCRD imposes such decisions on the GA but blames failures on the U.S. technical team. (4) Local organizations established to control resource allocation must have supportive linkages to pre-existing legitimate institutions – in LCRD, the hierarchy of chiefs. (5) Integration of a project into an existing institution – in LCRD, the Ministry of Agriculture – can strengthen a country's institutional capacity. (6) Different project components, levels of focus, and implementation periods may require different management styles. Early on, some U.S. technicians located in Maseru held line positions while their counterparts studied in the United States. Upon the latter's return, the technicians have become advisors to the Ministry. Within the RMA, on the other hand, U.S. technicians are not merely advisors, but must tell the RMA what to do. (Author abstract, modified).

**005** **PN-AAL-063**

**MF $1.08/PC $12.09**

### Development management in Africa : the case of the North Shaba rural development project in Zaire

Rosenthal, Irving; Jackson, Leroy; et al.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Center for Development Information and Evaluation

*AID evaluation special study, no.32*, Dec 1985, xvi., 21p. + 7 appendices : ill., maps, statistical tables, En

6600059

The 10-year North Shaba Maize Production Project is evaluated as a case study in development project design and management. Major findings are that: (1) the number of new and rebuilt roads and bridges were on target; (2) production and marketing of maize exceeded targets; (3) the general economic condition of beneficiaries improved after the commencement of project activities; and (4) pressure by the project helped achieve a higher farm gate price which, while not a stated project goal, contributed to the project's success.

Findings on the project's management strategy were both positive and negative. On the positive side, the project established an effective management unit under the direction of qualified Zairois and achieved a high level of local participation; also, the Government of Zaire provided project cadre who were motivated, capable, and well trained as managers. On the negative side, the project had a shifting objective and goal, which were never fully understood by the stakeholders; inadequate attention was given, especially early on, to project sustainability, and only partial solutions were found in the final years to sustain the project's institutional, personnel, and financial interventions.

Lessons learned are that: (1) an in-depth understanding of the local socioeconomic and technical environment is a *sine qua non* for project design and effective project management; (2) a development project tends to be more successful if its design is administratively simple and its management interventions are integrated into local social and production systems; (3) more complicated projects should devote greater time and money to management issues and need a long timeframe to achieve project goals; (4) where a project's larger context is administratively difficult, it may be more appropriate to design a project that works around, and is not a part of, the established system; and (5) although short-term accomplishments fostered by expatriates can help convince beneficiaries to accept long-term solutions, it is more important in the long run to train local personnel at all levels to implement project activities, even if this temporarily slows implementation. (Author abstract, modified)

**006** **PN-AAL-065**

**MF $4.32/PC $40.95**

### Manual for evaluating small - scale enterprise development projects

Goldmark, Susan; Rosengard, Jay
Development Alternatives, Inc.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural and Institutional Development
*AID program design and evaluation methods report, no.6,* Nov 1985, xv, 287p. : En
9311090
DS/OTR-C-0016

Practical advice on how to conduct cost-effective impact evaluations of small scale enterprises (SSE's) is presented in this manual. The techniques described, which fit into the normal time frame for impact evaluations (3-6 weeks each for field work and for data analysis and write up), are based on experience from evaluations in Africa, Latin America, and Asia. Low-, medium-, and high-level options from which to choose, depending on time and budget constraints, are given along with key issues to investigate, checklists for data collection, and frameworks for analyzing results. The manual's chapters discuss: (1-2) background of the manual and factors to consider prior to designing an evaluation methodology; (3-4) general guidelines for data collection and data analysis; (5-8) how to evaluate the performance of the donor agency, SSE credit institutions, SSE technical assistance agencies, and assisted SSE's; (9) how to determine the SSE project's impact on community members; and (10) how to synthesize the findings from the above analyses into a project-level evaluation. A 45-item bibliography (1968-85) is appended.

**007** **PN-AAL-075**

**MF $2.16/PC $14.56**

### Foreign aid and the development of the Republic of Korea : the effectiveness of concessional assistance

Steinberg, David I.
U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation
*AID evaluation special study, no.42,* Oct 1985, xi, 93p. : En
*Cover date: Dec 1985*
*Draft ed.: PN-AAR-550*

The role played by foreign aid in the Republic of Korea's economic recovery after World War II and the Korean War is examined in this admittedly personal study. The author believes that although some reasons for the recovery, e.g., linguistic unity, are exclusively Korean, the Korean experience offers some general lessons in achieving sustainable economic growth.

At first, Korea pursued a policy of import substitution, discouraging exports and stressing donor support, chiefly from the United States. After 1961, however, the government recognized import substitution's failure to ensure long-term economic growth and initiated an export promotion program while shifting the focus of donor support away from excessive reliance on the United States. The government used its administrative, political, and social power to control the economy by allocating institutional credit, setting and enforcing export targets, and promoting foreign investment. The Korean GNP, exports, overseas construction earnings, and manufacturing capacity grew accordingly, despite rising energy prices, a worldwide recession, and a large defense burden.

The creation of employment opportunities - a process aided significantly by donors, especially via training and human resource development - has lowered the poverty percentage from 40% to 10% and greatly enhanced equity. Nevertheless, notable rural and urban income disparities and regional income differences still exist, and women are denied equal status in the development process. This is largely due to the elimination of pricing subsidies and to the government's control of institutional credit, which limits marketplace access to major industrial and trading conglomerates

While Korea could not have experienced even moderate economic growth after 1953 without substantial donor support, a successful export program, commercial lending, and foreign investment have lessened the amount of concessional aid. Donor policy advice was generally followed if it was seen as serving Korean interests and supporting national directions already determined by the government. While multilateral donors have greater prestige and flexibility than bilateral donors, both types have their limitations.

**008** **PN-AAP-637**

**MF $1.08/PC $1.69**

### Making technical assistance teams more effective, the TPM (team planning meeting) advantage

Kettering, Merlyn; Schmidt, Terry
U.S. Dept. of Agriculture. Office of International Cooperation and Development. Development Project Management Center; U.S. Agency for International Development. Bureau for Science and Technology. Office of Multisectoral Development
Feb 1984, ii, 8p. : En
9310096

The Team Planning Meeting (TPM) is a systematic method of preparing technical assistance teams for field assignments. The objectives, approach, and benefits of TPM are herein described.

TPM sessions differ from the orientation typically given persons beginning field work in that the planning functions are integral to the actual work the team will be performing. The sessions cover two dimensions: task functions (e.g., what is to be done and how it can best be accomplished) and team building (melding team members into an effective, temporary organization). Conceptually, TPM is organized into nine interrelated modules focusing on, inter alia: sharing perceptions and expectations; discussing the project background; identifying clients and becoming aware of cultural characteristics; reviewing the scope of work and individual roles and responsibilities; establishing strategies, objectives, and an action plan, as well as plans for review, feedback, and evaluation; and ensuring that all logistic and administrative components are in place.

Among the benefits of TPM are a well prepared and integrated field team, a responsive field strategy, and good morale.

# GENERAL DEVELOPMENT

**009** **PN-AAQ-164**
**MF $1.08/PC $1.30**

### International disaster assistance

U.S. Agency for International Development. Bureau for Program and Policy Coordination
*AID policy paper*, May 1985, 8p. : En

The official policy of A.I.D.'s Office of United States Foreign Disaster Assistance (OFDA), the lead U.S. organization for responding to disasters abroad, is presented. The policy statement treats OFDA's overall objective – to strengthen a country's ability to cope with disaster through reliance on its own resources – and its specific goals: to provide swift emergency relief to disaster victims and to assist in rehabilitation when this is beyond local capacities; to promote country preparedness and early warning activities; and, on a case by case basis, to mitigate disaster effects by providing a planning basis for longer-term reconstruction through U.S. economic development assistance programs. Other policy aspects include upgrading U.S. capability to define vulnerable populations and to recommend prevention measures and encouraging the participation of other donors. The report also details disaster operating policies as well as policy guidance supplements concerning the funding of disaster preparedness and early warning activities, the use of disaster-related technology, assistance in treating hazardous materials and oil pollution, and transportation of donated relief supplies. Final sections treat disaster assistance staffing and provide some examples from OFDA's Lessons Learned Information System.

**010** **PN-AAQ-165**
**MF $1.08/PC $.91**

### Cooperative development

U.S. Agency for International Development. Bureau for Program and Policy Coordination
*AID policy paper*, Apr 1985, 4p. : En

A.I.D.'s policy for supporting cooperatives as part of its private sector policy thrust is presented. The paper explains the usefulness of cooperatives as a development tool; describes their characteristics and principles (business purpose, voluntary membership, democratic control, and equity in distributing contributions and benefits), and cites the key factors affecting their development – government attitudes/policies, effective management, cultural norms, and market/economic viability. The paper explains the two categories under which A.I.D. supports cooperatives (AID/W support for U.S. cooperatives in their direct relationships with developing country cooperatives, and regional bureau/country program support for cooperatives within bilateral projects) and notes the forms of this assistance (e.g., technical assistance, training, capital formation); assistance which has a multiplier effect, e.g., to a cooperative federation, is preferred. AID-supported U.S. cooperative development organizations, it is noted, are able to give the specialized technical help which overseas cooperatives increasingly require.

**011** **PN-AAR-320**
**MF $2.16/PC $14.95**

### Maximizing development assistance in the Caribbean through AID – PVO collaboration : report on the quarterly meeting of June 17–20, 1984 in Port-au-Prince, Haiti

Pragma Corp.; U.S. Agency for International Development. Advisory Committee on Voluntary Foreign Aid
(Maximizing Development Assistance in the Caribbean through AID – PVO collaboration, Port-au-Prince, HT, 17–20 Jun 1984)
Jul 1984, 56p. + 6 appendices : En
PDC-0000-C-00-3119-00

Proceedings are presented of the June 1984 quarterly meeting of the Advisory Committee on Voluntary Foreign Aid (ACVFA), A.I.D.'s liaison with private voluntary organizations (PVO's). The objectives of the meeting, which was held in Port-au-Prince, Haiti and was attended by over 200 individuals, were to discuss economic development in the Caribbean region, learn about existing development programs, and determine how U.S. PVO's can assist these programs. Discussion at the conference (apart from the keynote address, no formal papers were given) focused on the role of PVO's in the four pillars of A.I.D.'s development strategy – policy dialogue, institutional development, private enterprise, and technology transfer – and on ACVFA concerns in five areas – A.I.D.'s PVO policy, PVO/corporate and PVO/university relations, development education, Food for Peace, and women in development. Haiti was often used as a point of reference.

**012** **PN-AAS-968**
**MF $1.08/PC $9.23**

### Management needs of private voluntary organizations

Biddle, C. Stark
U.S. Agency for International Development. Bureau for Food for Peace and Voluntary Assistance. Office of Private and Voluntary Cooperation
2 May 1984, 63p. + attachment : En
9380250
PDC-0250-0-00-4035-00

On the basis of views gathered via personal interview or questionnaire from executives of 85 private voluntary organizations (PVO's) and from 17 A.I.D. officials, this study analyzes the key management problems facing PVO's. After outlining the factors which shape PVO management (U.S. public disinterest in development and in the work of PVO's, the burden felt by PVO's in complying with government regulations, the reactive nature of PVO leadership, and the geographical separation between PVO headquarters and field operations), the report discusses five major problem areas: institutional planning, financial planning, and the management of fund raising, human resources, and Board relations. It also reviews PVO's use of consulting services.

A final section urges A.I.D. to adopt a more open and pluralistic approach in providing management support to PVO's. Specifically, A.I.D. should: buffer its assistance through an intermediary having credibility in the PVO community; tailor assistance to PVO sub-groups and particular problem areas; distinguish helping PVO's with management problems from training them to deal with A.I.D. procedures; design assistance to broaden PVO perspectives and provide it on a meaningful cost sharing basis and in a manner that stimulates PVO growth; and review the prohibition on helping with fund raising. Appended is an analysis of responses to each question in the management needs questionnaire.

**013** **PN-AAT-608**

**MF $1.08/PC $3.90**

### Implementing policy and institutional change via performance disbursement : examples from the Philippines, Bangladesh, and Niger

Hermann, Chris
U.S. Agency for International Development. Bureau for Program and Policy Coordination. Center for Development Information and Evaluation
*AID evaluation occasional paper, no.1*, Jul 1985, v, 24p. : En

Performance disbursement (PD) is a recently developed mechanism whereby A.I.D. disburses program funds in a series of tranches, each conditioned by host country attainment of pre-established benchmarks in implementing policy and institutional reforms. This paper reviews limited applications of PD in the Philippines, Bangladesh, and Niger in order to evaluate the practice in light of possible wider use.

PD's major advantage is that it softens the adverse effects of policy reforms by lengthening the reform process over time and by providing monetary compensation for losses incurred by the reforms. Among other advantages are that it gives A.I.D. greater control over disbursement and promotes mutual agreement on project activity between A.I.D. and the host government.

Outstanding issues concerning PD discussed in the report include, inter alia, that: the conditions making PD an appropriate funding mechanism, as well as PD's compatibility with U.S. Government regulations, are unclear; the use of PD is largely a matter of judgment and host country circumstances; PD constitutes for both A.I.D. and the host country a high-risk and staff-intensive activity; and finally, PD does not ensure long-term institutional development.

Sixteen guidelines for the further use of PD conclude the study.

**014** **PN-AAU-400**

**MF $2.16/PC $17.68**

### Sustaining rural development : a guide for project planners, managers, evaluators, and trainers

Hannah, John P.; Honadle, George; et al.
Development Alternatives, Inc.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural and Institutional Development
May 1984, vi, 136p. : En
9365300

External support, financial resources, and host country or local organizational capacity affect the sustainability of a development project's benefits after project termination. To help project planners and managers ensure such sustainability, this guide: (1) presents a set of key questions to determine if a project is designed and implemented to continue benefits; (2) reviews and evaluates methods for collecting data needed to analyze sustainability issues and develop responses; (3) provides sets of specific questions to help field personnel analyze the potential impact of support, resource, and organizational capacity factors; and (4) suggests approaches for designing and implementing projects to increase the likelihood of sustainability. Organization is stressed, as it affects how projects are formulated and evaluated and how resources are allocated and managed; organizational issues addressed include project placement, linkages with other activities, decentralization, training, and technical assistance. References are provided with each section.

**015** **PN-AAU-651**

**MF $1.08/PC $3.90**

### Development administration and American foreign assistance policy : an assessment of theory and practice in AID

Rondinelli, Dennis A.
*Canadian journal of development studies, v.6(2)*, 1985, p.211-240 : En, Summaries in En, Fr

A variety of interventions to improve development management have been tried by A.I.D. over the past 30 years. These have included technology transfer and management control approaches as well as learning process and local capacity building methods. All of these interventions have been found to have their advantages and limitations under different conditions. This article reviews experience with development administration theories and practices in U.S. foreign aid programs and examines the results. The lessons of experience indicate that no one approach to development administration is universally applicable in foreign assistance programs in developing countries but that some approaches are more applicable to capital development than to human resources development projects. (Author abstract)

**016** **PN-AAP-464**

**MF $1.08/PC $10.53**

### Women's roles in water supply and sanitation in developing countries : a four - part bibliography by author, subject, phase of development, and country

Smith, Alice J.
U.S. Agency for International Development. Bureau for Science and Technology. Office of Health
*WASH technical report, no.21*, Feb 1984, 78p. : En
*B-task no. 410*
9311176
AID/DSPE-C-0080

The vital role played by women in water supply management and sanitation schemes in developing countries is the subject of this bibliography of over 100 items.

Entries are listed according to four indexes: main author, subject (appropriate technology, social and economic development, education and training, health, and sociocultural aspects), phase of development (assessment, planning, implementation, and evaluation), and country. The entries in the author index are arranged alphabetically, numbered sequentially, and cross-referenced to the other three indexes. Topics in the subject index, which was designed for use in a training or classroom setting, contain annotations of key documents and a list of documents of secondary importance. Appended are a section from a previous bibliography (Water for Sanitation and Health Project Technical Report No. 18) and further citations not included in the main bibliography. Where available, information on how to obtain the documents is provided.

**017 * PN-AAS-103**

**MF $3.24/PC $26.13**

### Women of the world : Sub-Saharan Africa

Newman, Jeanne S.
U.S. Dept. of Commerce. Bureau of the Census. Center for International Research; U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Women in Development
Aug 1984, viii, 200p. : charts, statistical tables, En, WID-2
9300400
** Data User Services Division, Customer Services (Publications), Bureau of the Census, Washington, DC 20233 USA*

National-level statistical data from the Women in Development (WID) Data Base created for A.I.D.'s use by the U.S. Bureau of the Census are analyzed to delineate the status of women in sub-Saharan Africa. Individual chapters in the report, one of a series on women in the developing world, analyze data on: population distribution and change in sub-Saharan Africa (excluding South Africa), with a stress on male/female ratios and including the impact of migration on women; women's literacy rates and education; women's role in regional economic activity (e.g., labor force participation rates); marital status and household characteristics; and the relationship between infant mortality and fertility rates and women's status. The concluding discussion of the advantages and limitations of national-level data for planning purposes notes that, while adequate information is critical in developing realistic WID programs, only the concern, commitment, and demands of African men and women can ensure women's full contribution to the region's development. Appended are several tables and a 10-page bibliography (1959-83).

**018 PN-AAS-104**

**MF $1.08/PC $8.45**

### Mainstreaming women : inclusive economic development in the Third World; report of the quarterly meeting

U.S. Agency for International Development. Advisory Committee on Voluntary Foreign Aid
(Quarterly Meeting of the Advisory Committee on Voluntary Foreign Aid, Washington, DC, US, 13-14 Sep 1984)
Sep 1984, 31p. + attachments : En

The Advisory Committee on Voluntary Foreign Aid devoted its 9/84 meeting to the issue of integrating women into U.S. economic support and development assistance programs. Highlights of the meeting - whose agenda focused on (1) women's economic participation via traditional money and banking channels and income generation projects, and (2) the economic implications of women's participation in human and natural resource development - are presented in this report.

Workshops, conducted by A.I.D. and PVO representatives with experience in the sector under consideration and by resource specialists, covered three major economic topics: (1) small enterprise development, specifically the process of moving women's micro-enterprises from ad hoc activities to small businesses fully participating in the market economy; (2) women's access to credit and their familiarity with capital formation to support entrepreneurial activities; and (3) the economic implications of educating and training women for income generation. Workshops were also held on the economic implications [illegible] women's participation in service delivery in projects on family and population planning, primary health care, agricultural technology development, water management, and reforestation. The meeting concluded by discussing policy implications for donor agencies and PVO's and presenting thirteen recommendations.

**019 PN-AAS-120**

**MF $1.08/PC $2.86**

### Developing non-craft employment for women in Bangladesh

Chen, Marty
Population Council; U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Women in Development
*Seeds, no.7*, 1984, 20p. : ill., ports., En

Experience of the private sector Bangladesh Rural Advancement Committee (BRAC) in assisting poor Bangladeshi village women obtain non-craft employment is reviewed. The focus of BRAC's women's program (a parallel program for men exists) is to organize women into cooperative groups which, with training, extension, credit, and logistics assistance from BRAC, are able to plan and manage their own social and economic activities. Shifting its focus from an initial and misguided attempt to train women for women's work, such as tailoring, to training women in productive and commercial skills, BRAC in the past 10 years has organized 20,000 women into over 800 active working groups and involved 10,000 of these women in viable economic schemes in the areas of horticulture, animal husbandry, poultry rearing, fish culture, rice processing, silk culture, and agriculture. After citing testimonies from individual women on the economic, social, and personal impacts of the BRAC program, the report concludes by listing 11 lessons therefrom.

**020 PN-AAS-135**

**MF $1.08/PC $2.47**

### Coopératives des vendeuses de marché : accorder crédit aux femmes (Cooperatives of market saleswomen : granting credit to women)

Bruce, Judith
Population Council; U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Women in Development
*Seeds, no.3*, 1984, 16p. : ill., chart, Fr

Efforts of the Nicaraguan Development Foundation (FUNDE) to establish credit cooperatives to provide Nicaragua's market saleswomen (*les vendeuses de marche*) with the liquid capital they need to ply their trade are described.

The stages in the development of the cooperatives, from start-up to self-sufficiency, are described; conditions for obtaining loans are outlined; and results of the first 7 years of operation are summarized. A total of 58 cooperatives were begun, with 15 of them operated for and by market saleswomen and most of the rest benefiting women in small farms and cottage industries. The credit afforded by the cooperatives enabled women not only to maintain but to expand their businesses and to take their rightful place in the economy. Some of the projects undertaken by the cooperatives benefited whole communities.

Lessons learned are, inter alia, that: (1) credit cooperatives must have a constituency with an immediate need for their services, require an initial investment low enough to enable poor women to participate, and be able to obtain rapid and tangible results; (2) what is needed to begin a credit cooperative is not a large amount of capital but the will to engage in the long term in the initiatives of women with limited means; and (3) the inherently social nature of credit cooperatives, among other things, makes it possible to raise the loan repayment rate even without requiring guarantees.

**021** **PN-AAT-990**

**MF $2.16/PC $14.82**

### Paths to the future : women in Third World development

Jenkins, Jerry; Berger, Brigitte; et al.
Sequoia Institute; U.S. Agency for International Development. Bureau for Program and Policy Coordination
May 1985, iv, 106p. : En
9300200
PDC-0092-I-03-4047-00

The often overlooked contributions of women to Third World economies are explored in this brief of three individual papers. Emphasis is placed on the importance of informal economies, in which women play a leading role, and the rise of which is seen as resulting from two factors. The first is anti-development, which occurs when distributional coalitions of economically successful individuals or firms work to retain their status by denying others, particularly women, the means through which they became successful. The second factor is the government policies which, influenced to a great extent by these distributional coalitions, retard economic growth; a list of such policies is provided and exemplified by reference to individual countries, including some which deviate from the general rule. Evidence of the growing recognition of informal economies by Third World governments and of the growing success of women in reversing anti-development policies is provided.

*Mechanization is likely to augment, rather than replace, traditional agricultural practices in developing countries.*

# ECONOMICS

**022** **PN-AAL-041**

**MF $2.16/PC $18.59**

### U.S. aid to Paraguay : assistance to CREDICOOP's agricultural credit union system

Solem, Richard Ray; Tippet, Bruce A.; et al.
U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation
*AID project impact evaluation report, no.56*, Jan 1985, xiv, 20p. + 5 appendices : En
*Bibliography: statistical tables*
5260101; 5260113; 5260118; 5260122

The impact of A.I.D.'s support for CREDICOOP, Paraguay's national agricultural credit institution, is evaluated.

CREDICOOP has established a significant network, growing from 16 to 70 credit unions, doubling its membership, and evolving from a savings and loan institution to a multipurpose cooperative. Its effectiveness, however, has only been fair to poor, being seriously hampered by a high loan delinquency rate due to unwise early lending policies, poor harvests caused by bad weather, and a wildly unpredictable crop market. Yet despite apparently steady decapitalization, CREDICOOP survives; it has developed an institutional toughness which defies logic. CREDICOOP's impact on small farmers has been mixed. Many fell into debt and have gone back to the private traders who have no collateral requirement and a short loan process; others have graduated to seeking credit from commercial banks and the National Development Bank.

The key lesson learned is that, despite several decades of public sector support for CREDICOOP and other large, formal credit institutions, the private sector credit delivery system continues to command 84% of the overall agricultural credit market and fully 98% of the small farmer market. A.I.D. should learn from these village-level businesses and seek ways of working through them. Other lessons learned are that: (1) integrating farmers and non-farmers in the same credit union can level financial flows within a union and provide relatively sophisticated leadership; (2) a credit institution must take into account both its operating costs and the costs of its competitor's money if it is to develop long-term sustainability; (3) the greatest weakness in any agricultural credit program is the unpredictability of weather and market conditions; (4) determination is the key to succeeding in a free market environment; (5) the ability to lend without requiring mortgage collateral, while raising the risk of default, also raises the ability to reach small farmer borrowers; and (6) availability of a credit union tends to make other agricultural service suppliers more competitive.

Appendices provide greater detail on the individual A.I.D. projects involved and discuss traditional and CREDICOOP interest rates.

**023** **PN-AAL-048**

**MF $1.08/PC $6.37**

### Agricultural credit in the Dominican Republic

Araujo, Frank; Viveros-Long, Ana Maria; Murphrey, Jim
U.S. Agency for International Development. Bureau for Program and Policy Coordination. Center for Development Information and Evaluation
*AID project impact evaluation report, no.58*, Jun 1985, xi, 13p. + 4 appendices: map, statistical tables, En
5170110; 5170116

Interviews with beneficiaries provide the main basis for this impact assessment of two loan projects undertaken by A.I.D. in the 1970's to spur development among Dominican Republic small farmers.

The first loan, channeled through the public-private Agricultural Bank, provided small farmers with credit, technical assistance, and vocational training and financed the construction of rural infrastructure. The second loan was designed mostly to upgrade the Ministry of Agriculture's (MOA) capabilities to serve the small farm sector, although credit was still a notable component.

The loans enabled the Government of the Dominican Republic (GODR) to increase the provision of credit to small farmers and contributed to ongoing training programs for Bank and MOA personnel and for farmers. However, there is no evidence that the increases in food crop production and in use of modern inputs during the projects' time frames were due to the higher availability of credit. Further, the local institutions which employed the projects' trainees were and remain weak and so have been unable to use their new personnel effectively. Finally, the MOA's provision of agricultural services was ineffective and may have inhibited the growth of the for-profit agricultural services sector.

Sustainability is a major issue. Few, if any, activities are being efficiently implemented and positive gains have not been sustained. The loans were overambitious and highlight the difficulty of promoting development through subsidized credit and services.

The main lesson learned is that human and financial resources cannot have significant impact within a non-supportive economic policy and institutional environment; as the projects unfolded, P.L. 480 Title I proceeds had to be used to prevent a complete collapse of some efforts. Another lesson is that credit cannot generate agricultural development, but only facilitate investment in existing productive activities - few of which, apart from rice, are available to Dominican Republic small farmers. A final lesson is that existing economic and development incentives must be favorable to project goals. Since the GODR's pro-urban bias was clear at the time the loans were planned, a move to a neutral structure of incentives might have led to increased impacts.

**024** **PN-AAL-049**

**MF $3.24/PC $28.47**

### Review of AID's experience in private sector development

Bremer, Jennifer; Cole, Elizabeth; et al.
Robert R. Nathan Associates, Inc.; U.S. Agency for International Development. Bureau for Program and Policy Coordination. Center for Development Information and Evaluation
*AID program evaluation report, no.14*, Apr 1985, xiv, 132p. + 5 appendices: statistical tables, En

A.I.D.'s experience since 1981 in implementing the Private Sector Development Initiative (PSDI) is synthesized in this report. After brief reviews of the background and methodology of the study and of PSDI itself, the report provides a conceptual framework for interpreting A.I.D.'s experience in programming PS projects by identifying the distinct features and requirements of PS-led development (firms, markets, international investment, constraints) and the major parameters that shaped A.I.D. programming (resources, limitations). Detailed discussion is then given to A.I.D. and other donor experience in the four key areas of PSDI – policy reform, project assistance to private enterprise, project assistance through private organizations, and mobilizing the Third World's PS for development. A final section assesses implications of the study for future A.I.D. programming in this area.

Key findings are that: (1) increased emphasis on host government policy reform can further the development of competitive markets and private enterprises; (2) only 17% of A.I.D.'s FY 1982–84 development assistance budgets was targeted for PS development projects; (3) there are in the Third World both advantages to using PS delivery systems and a large, barely tapped potential for doing so, although public sector involvement is often necessary, either as a direct provider or as a regulator; and (4) A.I.D.'s current institutional strengths suggest expanding PS programming in agricultural production and services, agro–industry, small and medium enterprises, and housing and social services (but not via direct lending to or direct equity investment in individual Third World firms, or support of U.S. private organizations). The report's fundamental suggestion is that A.I.D. continue its approach of balancing private and public initiatives and seek to increase awareness of possibilities for PS development in all Agency activities. Detailed recommendations for specific A.I.D. practices and related studies are included. Appended are descriptions of other–donor PS programs, a synthesis of A.I.D. Special Studies on PS development, and a bibliography of relevant publications.

**025** **PN–AAL–074**

**MF $1.08/PC $10.53**

## Synthesis of AID experience : small – farmer credit, 1973 – 1985

Lieberson, Joseph M.; Kotellos, Katherine A.; Miller, George G.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation

*AID evaluation special study, no.41*, Oct 1985, ix, 48p. + 7 appendices : En

In Spring 1973, A.I.D. reviewed its small farmer credit (SFC) programs to determine why so many had recently failed and to set conditions to improve future SFC programs. The effect of the Spring Review is analyzed in this study, which is based on an examination of 150 evaluations of 80 SFC projects undertaken between 1973 and 1985 and on indepth analyses of 50 of those projects.

The study found that since credit is typically a very small part of farm production costs, its absence is seldom a major constraint and its presence, even when highly subsidized, cannot offset other constraints. Specifically, the roughly one–third of the projects that proved successful were those that recognized three factors. (1) Farmers can invest credit productively only when appropriate technology and supporting services such as inputs, extension, and marketing are available. (2) Developing country policies (price controls, taxes) and economic conditions (inflation, interest rates) often need reform if agricultural development efforts are to succeed. (3) Mechanisms for credit delivery/recovery (assessment of creditworthiness, loan disbursements, loan monitoring, loan recovery) are best handled on a local level. Farmer groups, when well organized and committed to development, were positive factors in this regard.

The thoroughness of a loan application form and of the loan review process had little relationship to repayment rates. The key factors were the local loan officer's ability to judge character and creditworthiness, and good accounting, recordkeeping, and control practices in the local loan institution. Projects that worked with an existing rather than a new institution succeeded best, as did projects that provided technical assistance and training to improve institutional capacity. The study also found that provision of an interest subsidy to borrowers undid a large number of projects and that cheap credit can create resource misallocations by encouraging inappropriate technology and inappropriate investment – lenders that provided cheap credit were not financially viable, whereas those that set lending rates high enough to cover their cost of capital were successful.

**026** **PN–AAL–079**

**MF $2.16/PC $15.60**

## Agricultural credit, input, and marketing services : issues and lessons from AID project experience — an introductory review

Solem, Ray; Wilcock, David; et al.

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation

*AID program evaluation report, no.15*, Aug 1985, x, 53p. + 2 appendices : En

The design of A.I.D. projects providing agricultural credit, input, and marketing services has been too supply–side oriented, relying on criteria established by economists and scientists rather than on what will be adopted by farmers, and this orientation has carried over to the implementation stage. Thus concludes this A.I.D. evaluation study based on review of 203 projects, 44 of which were closely examined and 5 of which were selected for field–level impact evaluation, and discussion of findings at an international conference.

The majority of A.I.D. agricultural service projects fell short of their potential because they failed to meet three essential conditions – the user must find the service technologically and financially desirable, its delivery compatible and timely, and its utilization profitable. Credit projects typically fell short because they were tied to unproven technologies, implemented in a hostile policy environment, or included complicated application procedures or interest rates which were arbitrary and not dictated by the marketplace. Input projects often promoted technologies that, while scientifically sound, were judged inappropriate by farmers. A common mistake in marketing projects was failure to collect produce from farmers in a timely fashion; lack of market price stability was a problem in some projects.

The evaluation also assessed the relative advantages and disadvantages of public sector, private sector, and mixed delivery systems. Public sector delivery mechanisms were clearly superior for very general projects (e.g., infrastructure) and for those either focused on policy (e.g., price or exchange rate policies) or aimed at social transfers (e.g., price supports or input subsidies). Mixed public/private entities were most effective when projects required political support along with flexible and responsive management, while private delivery systems worked best in projects requiring both flexible management and individual farmer contact. Retailing of credit and inputs and purchasing at the farm gate were two tasks best performed by private sector entities such as PVO's, co–ops, and for–profit businesses.

# ECONOMICS

**027** **PN-AAQ-510**

**MF $1.08/PC $9.10**

## Investment in agricultural research : some economic principles

Scobie, Grant M.
International Maize and Wheat Improvement Center
*CIMMYT economics program working paper*, Aug 1984, 66p. : En
*Bibliography: p.51-66*
936411101

Managers of public sector agricultural research programs, particularly in developing countries, require guidelines which they can follow in effectively allocating their research resources. This paper provides managers with simple, pragmatic instructions for using economic decisionmaking models when planning research investment levels and allocating budgets.

Following overviews of the research investment question and of the goals of agricultural research, the author explains the use of cost-benefit analysis in determining how great an amount needs to be invested so as to achieve an optimal rate of return; particular emphasis is given to the economic principles of discounting and uncertainty. Methods of allocating a research budget between zones, commodities, or projects are then presented. Finally, three case studies illustrate the utility of cost-benefit analysis. Twelve tables and eight figures are included in the text and a 15-page bibliography (1956-82) is appended.

**028** **PN-AAR-514**

**MF $1.08/PC $6.89**

## Small - scale enterprise sectors in Egypt : a critical analysis of seven selected studies

Howe, Gary N.
U.S. Agency for International Development. Bureau for Near East. Office of Technical Support
Oct 1984, 52p. : En
NEB-150-0-4103-00

A synthesis and a critique of seven studies examining various aspects of Egypt's small-scale enterprise sector are presented. Major findings of the studies are that: Egypt's Law 43 has spurred development of large-scale private and mixed enterprises, but not of small and very small enterprises; the latter-type enterprises are characterized by relatively localized marketing, low levels of fixed and working capital, and heavy reliance upon skilled labor; and expansion of these enterprises would be facilitated by relaxed regulation, the provision of credit available through mechanisms geared specifically to their needs, the development of labor training schemes, and more stable supplies of raw materials at more equitable prices. Negatively, the studies fail to specify: the prospects of the small-scale sector and of its subsectors in relation to the large-scale sector; the difference between production in the formal and the very large informal small-scale sector; and the important social role played by the informal small-scale sector in providing subsistence labor on a wide scale. Areas of additional study to remedy these lacunae are suggested.

**029** **PN-AAS-721**

**MF $2.16/PC $16.12**

## Small enterprise development program for Ecuador : strategy paper

Berry, Albert; Lofredo, Gino; et al.
Partnership for Productivity International; U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Ecuador
Jun 1985, 115p. : En
9315317; 5180056
DAN-5317-C-00-3085-00

Ecuador's small scale enterprise (SSE) sector is analyzed and an A.I.D. sectoral strategy outlined. After describing the sector's potential contribution to economic development and the broad objectives of SSE promotion, the report focuses on two areas: (1) the current economic setting for SSE's (i.e., the labor market and macroeconomic, trade, fiscal, and other government policies); and (2) the extent to which credit, technical assistance, training, and information and research services, as well as services that facilitate SSE cooperation in business and lobbying activities, are available to meet the specific needs of the artisanal, small merchant, and small industry SSE subsectors. General findings are that sector development requires a supportive business environment along with the promotion of entrepreneurial skills and the provision of central services. Specific needs are for systematically applied rules and regulations, complementarity between the public and private sectors, and active promotion of entrepreneurship. A comprehensive strategy addressing these needs is outlined. Included are recommendations regarding economic policy, representational networks, service organizations, credit systems, technical assistance, and support for women's SSE's.

**030** **PN-AAS-759**

**MF $2.16/PC $19.63**

## PISCES II experience : local efforts in microenterprise development, volume 1

Ashe, Jeffrey
ACCION International. AITEC Division; U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural and Institutional Development
Apr 1985, ii, 146p. : ill., En
*V.2: PN-AAU-440*
9311090
AID/OTR-C-1828

The Program for Investment in the Small Capital Enterprise Sector (PISCES) examined the feasibility of helping the poor through direct assistance to small, informal enterprises. This report reviews PISCES Phase II demonstration projects and summarizes the lessons learned. First discussed are the characteristics and problems of informal sector businesses, their role in the economy, and aspects of effective microenterprise projects, including the importance of the local setting and beneficiary level. A typology of projects is presented in table form. Conclusions and recommendations are drawn from demonstration projects in the Dominican Republic, Costa Rica, Kenya, and Egypt, followed by an outline of the steps in implementing a microenterprise project: feasibility study, outreach and promotion, selection, credit, management training, organizational assistance, monitoring and evaluation, and project management. Implications for donors, three phases of funding strategy, and new directions for future projects are described.

**031** **PN-AAT-269**
**MF $1.08/PC $4.29**

### Rural deposit mobilization : an alternative approach for developing rural financial markets

Meyer, Richard L.
Ohio State University. Dept. of Agricultural Economics and Rural Sociology
(AID / IFAD Experts Meeting on Small Farmer Credit, Rome, IT, 26–28 Jun 1985)
*Economics and sociology occasional paper*, 1985, 31p. : En

Because of the difficulties now being experienced by many countries in obtaining foreign funds for development, internal funding, in the form of savings mobilization, should be substituted for external funding in rural financial market (RFM) projects. To support this thesis, the author of this paper: (1) reviews the key concepts of financial intermediation and rural finance; (2) summarizes the assumptions and problems of RFM projects; (3) discusses the potential for and determinants of rural deposit mobilization; (4) examines the link between rural savings and the viability of financial institutions; (5) analyzes arguments concerning controls over intersectoral resource flows; and (6) identifies some of the technical issues that governments and international agencies will need to confront in implementing financial reform. Stress is laid on the importance of the central bank in setting policy, providing guidance, and conducting research on RFM constraints and problems and on the need for donors to channel their scarce resources into easing adjustment problems and encouraging self-sustained development in countries seriously undertaking economic reform. A six-page bibliography (1964–85) is appended.

**032** **PN-AAT-624**
**MF $2.16/PC $16.90**

### Public finance and economic development : an annotated bibliography

Curry, Robert L., Jr.
U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Planning and Budgeting
1985, 127p. : En
OTR-0095-0-00-5075-00

Major works in the field of public finance in developing countries are discussed in this annotated bibliography, which was prepared to support A.I.D.'s efforts to use public finance as a tool for economic development. The bibliography is organized into four sections. The first section covers seminal works dating from 1951 to 1977; the other three present works dating from 1978 to 1985 in the respective areas of fiscal policy and economic development, taxation of the external sector (exports and imports), and taxation of income, wealth, and consumption. Each section contains a discussion and synthesis of the broad trends and developments in the literature over the period and a bibliographic listing in which each entry is accompanied by a summary description of the work and, where appropriate, a judgment of its contribution. The works were selected for inclusion in the bibliography on the basis of three criteria – public finance and developing country foci and scholarly substance.

**033** **PN-AAT-771**
**MF $3.24/PC $35.75**

### Papers and proceedings of the AID economists' conference, Annapolis, Maryland, November 4–8, 1984

Pragma Corp.; U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Economic Affairs
(AID Economists' Conference, Annapolis, MD, US, 4–8 Nov 1984)
19 Sep 1985, iii, 293p. : En
9300095
OTR-0095-C-00-5007-00

Papers and proceedings from the first Agency-wide conference of A.I.D. economists, held 11/84 in Annapolis, MD, are presented. Discussions focused on: (1) the methodology and common elements of International Monetary Fund (IMF) stabilization programs and World Bank Structural Adjustment Loans and their implications for A.I.D. programs; (2) the importance of bilateral policy dialogue and of increasing host country capability to master the technical aspects of such dialogue, and the movement towards greater reliance on the market system; (3) the use of economic analysis in planning and evaluating development projects, and the economist's role in project analysis; (4) the increasing reliance on private sector-led development and privatization, and the need to develop an analytical framework for such projects, including technology development and transfer; (5) presentation of econometric models, qualitative techniques, and microcomputers as tools for program analysis and policy dialogue in a wide range of areas; and (6) the role of economists in A.I.D.

**034** **PN-AAT-780**
**MF $2.16/PC $23.53**

### Tax policy and economic growth in developing nations

Rabushka, Alvin; Bartlett, Bruce
Keene, Monk and Associates; U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Economic Affairs
Nov 1985, iv, 173p. : charts, statistical tables, En
*Work order no.4*
9300095
PDC-0092-I-04-4045-00

Noting that the impact of tax rates – especially marginal tax rates – has been largely ignored in the development literature, this report analyzes developing country tax policies in light of new, market-oriented approaches to development. First, the impact of explicit taxation on development is discussed, taking into account recent research into the effect of taxation on the economy, and applying it to the special conditions of developing countries. Assessed next is the impact of implicit taxes – government regulations, controls, and other interferences with the free market that reduce the rates of return for work, savings, and investment. The relationship between tax structures/rates and economic growth, civil liberty, and democracy in developing countries is examined; included is a description of changes in marginal tax rates in some developing countries which reveals the distinction between pro-growth and anti-growth systems. Finally, various successful tax incentives which have spurred investment, output, and employment in developing countries are outlined. Numerous references and comments from experts are included.

**035** **PN-AAU-138**

**MF $1.08/PC $3.51**

### AID private enterprise policy dialogue : forms, experience and lessons

Muscat, Robert J.
U.S. President's Task Force on International Private Enterprise
28 Feb 1984, 23p. : En

Recent A.I.D. efforts to promote indigenous, private enterprises via policy dialogue are described. After outlining the various vehicles of policy dialogue (donor consortia, roundtables, and A.I.D. programming and assistance), the report briefly reviews A.I.D.'s experience with full-scale dialogue (Bangladesh, Sudan, Somalia, Kenya), with informal dialogue (Sri Lanka), and with dialogue through Housing Guarantees and country projects. The record shows a high level of dialogue of varied economic and political character and with a fair degree of success. Major successes have occurred where governments have turned away from socialism; in Egypt, on the other hand, a large assistance program has not notably affected policy. Among lessons learned are that: A.I.D. needs indirect means of dialogue when political reasons preclude direct dialogue; a policy framework defined by the IMF/World Bank and the host government provide A.I.D.'s greatest prospects for effective policy dialogue, and dialogue can succeed only if it persuades host government officials in a position to veto or block effective implementation.

**036** **PN-AAU-286**

**MF $3.24/PC $35.62**

### International conference on privatization

U.S. Agency for International Development
(International Conference on Privatization, Washington, DC, US, 17-19 Feb 1986)
Feb 1986, v.p. : En

Consonant with its position that state-owned enterprises have been among the major barriers to self-sustaining growth in developing countries, A.I.D. sponsored a February 1986 international conference to discuss technical aspects of the privatization process. Following an introductory paper reviewing privatization worldwide and A.I.D.'s experience in that process, this report presents 13 workshop papers, 7-19 pages in length, which address the following topics: (1) the politics of privatization; (2) legal and tax considerations; (3) privatization of public services; (4) marketing of state-owned enterprises; (5) policy environments; (6) public and private responsibilities; (7) strategies employed in successful privatization efforts; (8) deregulation and privatization of marketing boards; (9-10) privatization in the agricultural/agribusiness and financial sectors; (11-12) preparing for and financing privatization; and (13) development of a country privatization strategy.

**037** **PN-AAU-377**

**MF $1.08/PC $9.75**

### Privatization of municipal services in Sub-Saharan Africa

Marceau, Ian W.
U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Policy Development and Program Review
Oct 1985, iii, 69p. : En
9300092
OTR-0092-0-00-5129-00

The privatization of key municipal services (MS) in sub-Saharan Africa - urban water supplies, urban transportation, electricity supply, and communications - is examined in this report, the fruit of a literature search which had to rely on general literature on privatization in the region. After discussing the historical genesis of sub-Saharan MS, the report describes MS as economic goods and examines how their provision by the public sector depends on whether the service constitutes a public, a private, or a merit good. The criteria used to evaluate the efficiency of delivery, economic and x-efficiency, and public-choice sufficiency are described. MS provision by government entities or parastatals and by the private sector is examined, and the sociopolitical and economic dynamics of privatizing MS, as well as the feasibility of various forms of privatization, are discussed. A summary final chapter recommends strategies available to A.I.D. for promoting privatization of MS; in light of the political nature of the issue, caution is recommended.

**038** **PN-AAU-439**

**MF $2.16/PC $13.91**

### Private sector development : policies, past activities, and future strategy

Goldmark, Susan; Harmon, David; Mead, Donald
U.S. Agency for International Development. Bureau for Asia and Near East. Tunisia; Harvard University. Institute for International Development; U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural and Institutional Development
19 Nov 1985, ix, 86p. + 2 annexes : En
9365426
DAN-5426-C-00-4098-0

Two analyses - one of the constraints to the long-term growth of the Tunisian economy, especially its manufacturing sector, the other of the high administrative burden and lack of coherent focus of A.I.D.'s Private Sector Development Project (PSDP) - preface this strategy for the future development of Tunisia's private sector. It is recommended that USAID help Tunisia alleviate constraints on production of export goods by redesigning the PSDP to focus on export promotion issues. Specifically, the project should: (1) establish a loan fund to finance the goods and equipment needed by small and medium exporters, and a hard currency fund for exclusive use by Tunisie Leasing clients; (2) use funds from the Financial Markets project for a constraint analysis study, long-term TA to Tunisia's financial sector, and mid-level commercial and development bank staff seminars; (3) strengthen the capacity of the Federation of Exporters (FEDEX) to provide market information and product development services to its members; and (4) help the Tunisian Union of Industry, Commerce, and Small Business

(UTICA) become the focus of ongoing analysis of Tunisian export policies.

**039** **PN-AAU-440**

**MF $3.24/PC $30.42**

### PISCES II experience, local efforts in micro-enterprise development, volume II : case studies

ACCION International. AITEC Division; U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural and Institutional Development
Dec 1985, x, 226p. : En
*V.1: PN-AAS-759*
9311090
AID/OTR-C-1828

Case studies are presented of four demonstration projects assisted under Phase II of A.I.D.'s Program for Investment in the Small Capital Enterprise Sector (PISCES): (1) the Dominican Development Foundation's Micro-Enterprise and Solidarity Group projects; (2) the Small Business Scheme of the National Christian Council of Kenya; (3) the Income-and Employment-Generation Program of the Coptic Evangelical Organization for Social Services in Egypt; and (4) the Aid to Urban Services Through a Solidarity Guarantee project of Costa Rica's Popular Community Development Bank. Included are detailed descriptions of each of the programs, their strengths and weaknesses, and their economic and social impacts.

**040** **PN-AAU-580**

**MF $2.16/PC $13.91**

### AID agribusiness activities in Africa, 1970 - 1986

Mooney, Timothy J.
U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural and Institutional Development
Nov 1985, ii, 82p. + 2 appendices : charts, En
9311096
DAN-1096-0-00-5038-00

Agribusiness and agribusiness-related activities funded by A.I.D. in Africa since 1970 have, according to this survey of 220 such activities, (1) focused on production, with less attention to processing and marketing; (2) seldom involved the private sector; (3) been notably helped by private voluntary organizations; and (4) been geared more to very small businesses and parastatals than to small-and medium-scale enterprises. To help formulate an agribusiness development strategy, lists are provided of countries that favor private sector agribusiness development, of current World Bank and UNIDO activities, and of ongoing and new A.I.D. agribusiness projects that should be closely monitored for input into future projects. In designing these future projects A.I.D. should: (1) apply a commodity systems approach; (2) devote more attention to processing and marketing; (3) improve distribution channels for inputs and marketable products; and (4) focus on improving the processes of agricultural and agribusiness development. A conceptual framework for designing, implementing, and evaluating A.I.D. agribusiness projects is included.

*The small industry of stovemaking, using old cans and scrap metal, offers an important source of income for this Indonesian kampung.*

# AGRICULTURE

**041** **PN-AAL-042**

**MF $1.08/PC $8.71**

### Tanzania seed multiplication

Ratchford, C. Bryce; Meyers, L. Richard; et al.
U.S. Agency for International Development. Bureau for Science and Technology; U.S. Agency for International Development. Bureau for Program and Policy Coordination
*AID project impact evaluation report, no.55*, Jan 1985, xv, 21p. + 7 appendices : chart, map, En
6210092

Tanzania has long suffered from lack of an organized seed production and distribution system. This report presents the results of an impact assessment of a project (1/70–12/82) to increase the quality and quantity of seeds produced in Tanzania.

The project succeeded in enacting seed legislation and regulations and creating a system for producing high-quality seeds and distributing them to small and large farmers. Farmers are using the seeds and increasing their crop production. The returned recipients of long-term training have proven to be dedicated and competent.

Despite these successes, Tanzania's overall crop production system is working far below its capacity. Only 4,000 T of food crop seeds were sold in 1982, less than 5% of capacity. Total food crop production has continued to decline since the early 1970's. Credit and extension institutions have not cooperated with the seed project as expected. Finally, project sustainability is threatened by lack of spare parts and trained service personnel to support the project's mechanized seed production process and by the failure to institutionalize training for a second generation of project personnel.

Lessons learned are that: mechanization should be minimal and kept simple; project implementation should be flexible; distribution and marketing problems should be addressed prior to the start of production; design assumptions regarding the expected cooperation of related institutions should be carefully evaluated and diligently pursued during implementation; the design should take into account the fact that, in an economy with strong public sector control, free market mechanisms will not operate as in a market economy; exaggerated claims for potential impacts may initially create enthusiasm, but will ultimately hurt project credibility and sustainability; and design and implementation plans should seek to compensate for weak or lacking institutional support systems.

Appendices include, inter alia, a 25-item bibliography (1975–83) and information on the evaluation methodology, on seed production, and on sociopolitical, agricultural, and general characteristics of Tanzania.

**042** **PN-AAL-045**

**MF $1.08/PC $7.15**

### Program review of the International Fund for Agricultural Development (IFAD)

U.S. Agency for International Development. Bureau for Program and Policy Coordination. Center for Development Information and Evaluation
*AID evaluation special study, no.21*, Feb 1985, x, 35p. + 3 appendices: statistical tables, En

This A.I.D. program evaluation concludes that the International Fund for Agricultural Development (IFAD) is making a significant contribution to improving the economic condition of the rural poor in developing countries.

IFAD's performance has been shaped by its unique, sole focus on increasing food production and income of small farmers and the rural landless; its reliance on other development organizations to implement projects; its requirement to maximize co-financing with other donors: its relatively small staff and funding level; the broad range of countries IFAD helps; and its accountability despite limited direct project control.

Over the past 7 years, IFAD has helped implement 160 integrated rural development, irrigation, credit, and agricultural production projects in 84 countries. Despite the newness of most projects, increased yields and incomes are already apparent and IFAD is emerging as a leader in designing credit projects, promoting donor involvement in higher risk projects, and introducing improved technologies. IFAD's most successful projects have: focused on well-specified target groups and had clear mechanisms for reaching them; introduced quick-yielding food production techniques adapted to poor farmers or comprehensive packages of integrated services; emphasized large-scale production of low-cost foods; and fostered on-farm employment. Less successful IFAD projects have emphasized large-scale infrastructure investments which only indirectly benefit the rural poor.

IFAD needs to increase its emphasis on and range of institutions chosen for co-financing projects; improve project monitoring and evaluation; try to reach more women; increase emphasis on priority U.S. development assistance policies, especially on long-term institutionalization of project management; and focus aid in fewer countries.

Three appendices give details on IFAD projects.

**043** **PN-AAL-046**

**MF $1.08/PC $6.37**

### Guanchias Limitada : a case study of an agrarian reform cooperative and its long-term relationship with a multinational firm in Honduras

McCommon, Carolyn M.; Rueschhoff, Norlin G.; et al.
University of Notre Dame. Kellogg Institute for International Studies; U.S. Agency for International Development. Bureau for Program and Policy Coordination. Center for Development Information and Evaluation
*AID evaluation special study, no.22*, Mar 1985, ix, 33p. + 3 appendices : charts, map, En
9300085
OTR-0085-0-00-3367-00

Guanchias, Ltd., a Honduran banana-producing cooperative, has since its inception in 1965 achieved remarkable economic growth and effected considerable improvements in the lives of its members – accomplishments due in no small part to its partnership with Standard Fruit and Steamship Company, a U.S.-based multinational agribusiness firm. This study traces the development of Guanchias and of its collaboration with Standard.

Guanchias' origins lie in the failure of Honduras' agrarian reform movement to adequately address the problems of landless peasants; the promise of financial security through a guaranteed market for its bananas led the co-op – which had barely survived its first 3 years – to seek participation in Standard's independent growers program. Over the next 15 years, benefiting from exposure to Standard's work ethic and technical and business procedures, Guanchias members learned how to become efficient managers and laborers, how to bargain as an equal with their more sophisticated partner, and how to reinvest capital earnings in productive and socially beneficial member services – potable water, sanitation, housing, health care, and education.

Standard, for its part, received an assured supply of bananas at relatively low cost and low risk in an uncertain environment and enhanced its public image through its involvement with independent growers.

The Guanchias–Standard partnership has been criticized as a one-sided relationship in which a paternalistic benefactor takes advantage of contracted labor, but in fact the joint venture has served both parties well and has also been good for economic, human, and institutional development in Honduras. Although it is unclear as to how the relationship will evolve in the future, its strength was great enough to override a challenge to the contract in the early 1980's. Moreover, Guanchias' continued reliance on Standard for materials transfers, extensive credit, and technical assistance suggests mutual acceptance of their interdependency.

Implications of the Guanchias-Standard collaboration for Guanchias, the Government of Honduras, and development planners and donors are offered in conclusion.

**044** **PN-AAL-047**

**MF $1.08/PC $6.37**

### Private sector development in the Thai seed industry

Brown, Larry; Underwood, Wayne; et al.
U.S. Agency for International Development. Bureau for Program and Policy Coordination. Center for Development Information and Evaluation
*AID evaluation special study, no.23*, Jun 1985, xiv, 20p. + 7 appendices : En
4930270; 4930326

Factors contributing to the dynamic growth of a modern, private sector seed industry in Thailand over the past 9 years are reviewed.

A.I.D.'s 1975 and 1981 seed development loans have been a major factor. Implemented by the Ministry of Agriculture with excellent technical assistance from Mississippi State University, the projects have established six seed centers. While primarily aimed at producing improved rice seed for distribution to disaster victims, the centers' ability to process improved seed of other species and their small size and location in rural areas close to producers and markets enable them to demonstrate and transfer appropriate technology to private seed producers. A major component of the second loan has been creation of – and MSU participation in – a Seed Club composed of representatives of the Thai seed industry's public, private, and education sectors.

The timing of the projects was essential; the first coincided with the development in 1975 of Suwan I, a high-yielding, downy mildew-resistant corn which demonstrated the commercial viability of varietal seed production and provided the catalyst for private sector investment. The development of Suwan I was a crown in the Royal Thai Government's (RTG) extensive varietal research program, dating back to the 1940's, which, together with the RTG's promotion of agricultural development within the context of a free enterprise, market-based economy and its efforts to disseminate information to farmers and investors, develop an agricultural extension service, and increase private sector activity through the Board of Investment, has been a critical factor in the growth of the seed industry.

The industry's growth has also been abetted by the Thai university system's contribution of several research breakthroughs and a good supply of trained scientists and technicians; A.I.D. participant training and crop development programs; other donor programs (Rockefeller Foundation, the European Economic Community, Japan); as well as a stable socioeconomic system and good public infrastructure.

Suggestions are made for ways in which the RTG and A.I.D. can continue successful private sector development.

**045** **PN-AAQ-408**

**MF $1.08/PC $12.74**

### Service delivery channels for selected agricultural services

Taylor, Peter Leigh
U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation
16 May 1984, 50p. + 2 appendices : En

The relative effectiveness of various institutional channels in delivering agricultural credit, input, and marketing services is assessed in this report, which is based on a review of documentation for 203 agricultural service delivery projects in Africa, Latin America, Asia, and the Near East.

Although public and mixed public/private service delivery channels were predominant in the projects reviewed, utilization of private channels (voluntary, cooperative, and profit-oriented) was found to have increased since 1973. Problems common to projects regardless of the service delivery channel used include those involving institutional interface with A.I.D. requirements, incongruities in institutional perspectives, staffing, and overly ambitious project design. While the public channel carries official authority and can provide services that are not feasible for the private sector, its operation is often inefficient and unequal in resource allocation and distribution. Although the public/private channel combines the advantages of both sectors, inter-institutional coordination is difficult and public policy still rules its use. Private voluntary organizations tend to be flexible channels, capable of a competent, intensive approach; however, their use is often not cost-effective. Despite administrative problems, the cooperative channel allows for direct service delivery with maximum beneficiary participation, but cooperatives are difficult to organize and maintain and tend to be plagued by administrative problems. Finally, the private for-profit channel can provide efficient, market-oriented services, although it tends to serve only the more profitable segments of the population.

(Author abstract, modified)

**046** **PN-AAR-318**

**MF $3.24/PC $26.13**

### Potential of starch graft polymers, super slurpers, for forestry and agriculture

U.S. Agency for International Development. Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources
*Technical series, no.2*, 20 Apr 1984, (265p.) : En

# AGRICULTURE

Hydrolized starch polyacrylonitrile graft copolymers, known as super slurpers or superabsorbents, can absorb 2,000 times their weight in distilled water and can be used as absorbents, thickening agents, soil moisturizers, inoculant carriers, or seed coatings. This compilation presents information on these materials as regards their possible use in agriculture and forestry.

Information provided by the U.S. Department of Agriculture is presented in a first section, including items from three research publications, a list of potential applications, patent information, and a list of commercial suppliers. The next section includes 15 papers from newsletters, journals, and correspondence on commercial superabsorbents (e.g., Terra-sorb, Agrosoke), followed by 19 items from Terra-sorb advertising material. Final sections contain nine theses or research papers on superabsorbents.

**047** **PN-AAR-761**

**MF $1.08/PC $1.82**

### Small, effective seed multiplication program : Tunisia

Horton, D.; Monares, A.
International Potato Center
*Social science department working paper : 1984, no.2*, 1984, 13p. : En
936411107

A small, highly productive seed potato multiplication program is now fully institutionalized in Tunisia's research–extension system and financed entirely with local funds. The program has had great impact on potato production as well as great economic benefits. The program's net internal rate of return is estimated to be at least 40% as of 1983, and is projected to reach 50% by 1990, higher than most other Tunisian development projects.

Three keys to the program's success have been identified. (1) Although Canada provided funds and the International Potato Center (CIP) provided technical assistance, the program was developed within the framework of existing national institutions and was regarded as a Tunisian program. (2) The program focused on solving one critical problem – poor physiological condition of seed at planting time. (3) As the program expanded, high quality standards were maintained. Through the seed program, extension, and training, the Tunisian Potato Program contributes to potato crop expansion, yield increases, cost reduction, and reduced dependence on foreign seed sources. Through CIP's regional programs, other countries are benefiting from the Tunisian program. (Author abstract, modified)

**048** *** PN-AAS-306**

**MF $1.08/PC $4.29**

### Case study of on-farm adaptive research in the Bida agricultural development project – Nigeria

Ashraf, M.; Balogun, P.; Jibrin, A.
International Institute of Tropical Agriculture; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
*OFR bulletin, no.1*, Mar 1985, 29p. : charts, statistical tables, En
936411103
* *International Institute of Tropical Agriculture, PMB 5320, Oyo Road, Ibadan, Nigeria*

As part of the Bida Agricultural Development Project (BADP) in Niger State, Nigeria, the International Institute of Tropical Agriculture is conducting an on-farm adaptive research program aimed at collecting agronomic date and introducing improved technologies in the State's southern savanna. This preliminary case study describes the character and productivity of the four distinct cropping systems (lowland rice, upland yam, upland cassava, and upland cereals) that are the program's target domains; analyzes the systems' production constraints and the opportunities for experimentation; and describes the design and results of on-farm trials and farmers' reaction thereto.

Results show the program's ability to quickly improve local farming systems, as well as farmers' effectiveness – provided they are allowed to participate as a group in order to reduce risk – in diffusing improved technologies. The program has also demonstrated the efficiency of BADP's Monitoring and Evaluation Unit in collecting agroeconomic data and has helped develop linkages among BADP's commercial, extension, and agronomy sections. The major problem has been the lack of trained personnel – a problem endemic to West Africa as a whole.

**049** *** PN-AAS-815**

**MF $1.08/PC $6.11**

### Latin American agricultural research; the public sector : problems and perspectives

Pineiro, M.; Trigo, E.
International Service for National Agricultural Research; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
*ISNAR working paper, no.1*, Jan 1985, 41p. : statistical tables, En
936411113
* *International Service for National Agricultural Research, P.O. Box 93375, 2509 AJ, The Hague, Netherlands*

The new challenge facing Latin American national agricultural research institutes (NARI's), originally established at the end of the 1950's, is assessed and ways to meet that challenge are suggested. After describing the NARI system and its resources, the report discusses the new conditions under which NARI's must operate: the increasing complexity of agricultural technology; the rise of the private sector; the emergence of other institutions, both public and private, involved in development activities and technology diffusion; the stifling effects on scientific creativity of the bureaucratization of public sector administration; and fluctuations in the support provided by national budgets. Succeeding sections outline elements of a new organizational model to help NARI's respond to these problems, analyze the complementarity of NARI's and international research centers, and discuss the need to consolidate and obtain external financing and technical assistance for NARI's in view of the debt crisis affecting most Latin American countries.

**050** **PN-AAS-833**
**MF $2.16/PC $13.26**

### Local institutional development for agriculture

Uphoff, Norman; Van Dusen, Katy
Cornell University. Center for International Studies. Rural Development Committee; U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural and Institutional Development
*Special series on local institutional development, no.5,* Oct 1984, x, 92p. : En, LID no.5
*Bibliography: pp.81-92*
9311096

Existing literature on the local institutions which support agricultural development by providing production inputs and by storing, processing, and marketing outputs is reviewed. An initial section distinguishes the various types of local support institutions – local administration, local governments, membership organizations, cooperatives, service organizations, and private business. After noting that the development of local institutions can be fostered by common interests among producers and between producers and higher-level institutions which do not exploit them, the authors devote individual chapters to reviewing the ways in which these general principles are affected concretely by differences in the commodity produced, in the conditions of production, and in the socioeconomic characteristics of producers. An overall conclusion is that agricultural development is best served when different types of organizations and institutions work together in concert. Annexes present capsule descriptions of the 15 experiences in Latin America, Africa, and Asia which the authors found most instructive either positively or negatively. A list of 141 references (1957–84) is provided.

**051** **PN-AAT-188**
**MF $1.08/PC $12.74**

### Export market potential for 15 Ecuadorian fruits and vegetables

Kilmer, Gary; Kakis, Jack
Development Alternatives, Inc.; U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Ecuador
May 1985, viii, 78p. + 4 annexes : statistical tables, En
5180019
518-0019-G-00-4119-00

A study of the export potential of 15 vegetables and fruits grown in Ecuador is presented. Using quantifiable data sources and informal industry contacts, the study team divided the commodities into 3 groups on the basis of their export potential. Group A – dehydrated bananas, blackberries, blueberries, pigeon peas, and yams – hold the greatest export potential, with favorable markets in the United Kingdom, the United States, and Western Europe. Group B – the exotic tropical fruits (guanabana, guava, naranjilla, tamarind, and passion fruit) – is less suitable for export than Group A, but its potential should be explored further. Group C – the temperate climate vegetables (celery, cauliflower, cucumbers, lettuce, and squash) – has negligible export potential.

Recommendations are that Ecuador: stress high-value commodities for off-season U.S. markets; enter Western European and Far Eastern markets cautiously; develop a central marketing agency and stress the export value of commodity groups instead of specific products; continue to expand its agroprocessing capacity; and consider the export potential of asparagus, artichokes, garlic, melons, and okra. The continuing need for U.S. marketing assistance during the early stages of an export development program is noted. Appendices provide related information on U.S. regulations and standards.

**052** **PN-AAT-693**
**MF $3.24/PC $27.95**

### INTSORMIL, fighting hunger with research : a five – year technical research report of the grain sorghum / pearl millet Collaborative Research Support Program

Winn, Judy F.; Teetes, George L.
University of Nebraska, Lincoln. Institute of Agriculture and Natural Resources; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
1984, 225p. : ill., charts, statistical tables, En
9311254
AID/DSAN/XII/G-0149

The International Sorghum and Millet (S/M) Program (INTSORMIL), a collaborative research support program under contract to A.I.D., has compiled this 5-year (1979–84) technical research report on S/M research. The report covers six areas. A section on agronomy/physiology treats environmental stresses, cropping systems, and the effects of mineral element uptake and water and temperature on S/M production. A review of S/M plant breeding focuses on increasing productivity and resistance to disease, drought, and insects; an evaluation of S/M germplasm for dryland farming is included. Reports are presented on INTSORMIL's efforts in entomology and pathology in regard to the roles played by various elements in S/M preservation, storage, and resistance to disease, as well as research in the food, chemical, and nutritional qualities of S/M and S/M consumption rates. A final section examines sociocultural restraints to S/M consumption in developing countries, the international S/M system, and the role of S/M in the farming, marketing, and agricultural research systems of the Sudan, southern Honduras, and Mexico.

# AGRICULTURE

**053** **PN-AAT-772**

**MF $1.08/PC $3.64**

### Biotechnology and community development for food production : a case study, Rhizobium innoculant production in Thailand, applied to tropical soybean production for food

Slavics, John J.; Bear, Marshall
Appropriate Technology International; U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural and Institutional Development
1985, 23p. + 4 annexes : En
9365428
DAN-5728-A-00-3047-00

Small-scale production of *Rhizobium* inoculant for direct use by small farmers marks one of the first uses of cutting edge biotechnology to reach the rural poor. This report discusses a project planned for small-scale *Rhizobium* inoculant production in Thailand, applied to tropical soybean production for food and conducted as a collaborative effort between Appropriate Technology International (ATI) and the SVITA Foundation. After briefly reviewing ATI, the development of inoculant technology, and economic/commercial outlooks for the technology in the Thai setting, the report discusses project plans for market development, technology adaptation and testing, and commercial small-scale production and distribution systems. Expected outputs include increases in soybean farmers' income and productivity, nitrogen enrichment of soil, and farmer control of critical farm inputs; development of a national strategy for *Rhizobium* dissemination; and, in the long term, lower imports of nitrogen fertilizers and soybeans, and increased employment. (Author abstract, modified)

**054** **PN-AAT-834**

**MF $1.08/PC $6.89**

### Data collection in subsistence farming systems : a handbook

Stallings, James L.
Auburn University. Alabama Agricultural Experiment Station; U.S. Agency for International Development. Bureau for Africa. Office of Regional Affairs
*Agricultural economics series, no.38*, Oct 1985, 52p. : En
6980135

The most recent techniques for collecting data on subsistence farming systems are summarized in this handbook in order to help researchers overcome the many obstacles encountered in collecting such data, e.g., the existence of often complex and non-standard cropping systems, the high illiteracy rate among subsistence farmers, and the existence of migratory livestock systems. After outlining the steps involved in the complete planning of a survey, the author presents techniques for measuring – under varying physical conditions and systems of production, ownership, and disposal – major problems in regard to crops grown and crop area (22 problems); crop production, consumption, and sales (16 problems); and livestock numbers and production (7 problems). Ten references (1969–80) are provided.

**055** **PN-AAT-837**

**MF $4.32/PC $45.63**

### Training program for pesticide users : trainer's manual

Granovsky, T.A.; Howell, H.N., Jr.; et al.
Consortium for International Crop Protection; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
Jun 1985, xvii, 333p. : ill., charts, En
*Spanish ed.: PN-AAS-751*
9310930
AID/DSAN-C-0252

The Consortium for International Crop Protection (CFICP) has developed a practical and informal program to train extensionists and other field personnel who are charged with providing pest and pesticide training to small farmers, vendors, and other pesticide users. The training manual used in the program is presented. The manual consists of 13 subject-matter units, covering: integrated pest management and decisionmaking, pest control, the effects of pesticides, pesticide labels, worker safety, forms of pesticides and their dangers, mixing procedures, cleaning up after pesticide spills, and safe pesticide storage and application. Each unit contains a list of materials required and is designed so that it can be taught separately, although adaptation to local situation is advised. Many of the units contain illustrations and practical suggestions to aid the trainers in their teaching efforts. Also included is a unit for evaluating the program and one containing various teaching aids and resource materials.

**056** **PN-AAT-984**

**MF $1.08/PC $9.88**

### Report of the United States Presidential Agricultural Task Force to Zaire

U.S. Presidential Agricultural Task Force to Zaire
Feb 1985, vii, 78p. : En

A U.S. Presidential Agricultural Task Force visited Zaire to help identify ways to strengthen the country's agricultural sector. Zaire's potential to become the Breadbasket of Africa greatly impressed the team, which assessed and provided recommendations in regard to sector policy; agricultural finance; research, extension, and higher education; human resource development; agricultural production and input supply; forestry; and livestock resources. Major needs include the areas of agricultural infrastructure, research and extension organization, and human resource development.

**057** *** PN-AAU-040**

**MF $2.16/PC $12.87**

### ICARDA research highlights, 1984

International Center for Agricultural Research in the Dry Areas; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
Aug 1985, 96p. : ill., charts, statistical tables, En
936411112
** International Center for Agricultural Research in the Dry Areas, P.O. Box 5466, Aleppo, Syria*

Highlights of research in basic food crops conducted in North and West Africa during 1984 by the International Center for Agricultural Research in the Dry Areas (ICARDA) are presented. Included are descriptions of research programs in food legumes (12 programs), cereals (7), pastures, forage, and livestock (6), and farming systems (6). A report on ICARDA's seed health laboratory and an update on new construction at ICARDA's central headquarters conclude the report. Particular successes include faba bean yield increases of 30–100% experienced by Egyptian and Sudanese farmers participating in ICARDA's Nile Valley Project; ongoing development of methodologies to use millions of hectares of fallow land for pasture and forage crops as an alternative to destroying marginal areas; and identification of productive strains of native species of medics which could greatly increase the supply of feed for sheep – the main source of income for most farmers. ICARDA also now has proof that yields of certain basic crops can be increased 50% in farmers' fields. ICARDA's future agenda includes farming systems research.

**058** **PN–AAU–140**
**MF $1.08/PC $4.42**

### Plan for supporting agricultural research and faculties of agriculture in Africa

U.S. Agency for International Development. Bureau for Africa; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
May 1985, 25p. + 5 annexes : chart, map, statistical tables, En

A long–range plan is presented for overcoming the difficulties, weaknesses, and constraints of agricultural research in Africa by strengthening national research capabilities and faculties of agriculture in eight core countries. Specifically, the plan would establish research networks by linking national research systems with international agricultural research centers (IARC's) and collaborative research support programs (CRSP's), as well as with regional research programs and centrally–funded A.I.D. projects, on 4–6 high–priority topics such as sorghum, millet, beans, and cowpeas. The plan would also provide long–term assistance to link 4–6 faculties of agriculture in program countries with other research institutions and programs. Coordination of U.S. support for this large and long–term (25–year) effort will be facilitated through the Cooperation for Development in Africa and through collaboration with multilateral donors, especially the World Bank.

**059** **PN–AAU–145**
**MF $1.08/PC $4.68**

### Bibliography of readings in farming systems : 1985, volume 2

University of Florida. Institute of Food and Agricultural Sciences; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture; U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural and Institutional Development
1985, 33p. : En
9364099

Volume II of a bibliography of readings is presented by A.I.D.'s Farming Systems Support Project as part of its efforts to increase the accessibility of farming systems research (FSR) literature. In addition to standard bibliographic information, each of the 100 citations includes an abstract of the reading and a note on the latter's availability. Among the areas of FSR covered in the bibliography are agricultural surveys, agricultural technology, crop production, cropping systems, data collection, dryland farming, economic analysis, family farms, interdisciplinary research, livestock, multiple cropping, and research design. Readings are presented on FSR projects on mountains, savannas, and small farms and in the semiarid and tropical zones of countries in Africa, Asia, Central America, and the Eastern Caribbean. Indexes by subject, geographic area, author, and sponsoring institution are included, as are document ordering instructions and an order form.

**060** **PN–AAU–217**
**MF $1.08/PC $11.57**

### Sustainable agriculture in development assistance

Freeman, Peter H.
International Institute for Environment and Development; U.S. Agency for International Development. Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources
Aug 1984, iv, 81p. : charts, En, EPM 37
9365517
DAN–5517–A–00–2066

The appropriateness of sustainable agriculture (SA) as a focus for development assistance is herein explored. The author contends that SA, while ultimately a question of means, could as a goal unify competing or mutually exclusive ends (i.e., economically viable production, social equity, and environmental soundness) to address the problems of small, poor farmers in tropical environments. Agronomic and economic research on organic farming (the principles underlying sustainability), how SA is understood in the development community, and international assistance in support of SA are reviewed; also, constraints to operationalizing SA are described, which include miscommunication, absence of sustainable systems for Third World farmers in all environments, agronomists' apparent lack of interest, difficulty in achieving adequately integrated development efforts, and temperate zone technical bias. Recommendations are made for International Institute for Environment and Development and A.I.D. programs. Numerous appendices include related articles, references, resources, and working agenda.

**061** **PN–AAU–349**
**MF $2.16/PC $19.11**

### Modern varieties, international agricultural research, and the poor

Lipton, Michael; Longhurst, Richard
World Bank; Consultative Group on International Agricultural Research; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
*CGIAR study paper, no.2,* Oct 1985, xi, 139p. : En
9364111

Have modern varieties (MV's) actually benefited the poor as producers, laborers, and consumers? If one simply adds up existing evidence on the biological features of MV's, their adoption (often after a time lag) by small farmers, the increase in labor–use due to MV's, and their effect on poor people's consumption and nutrition, this question evokes on balance a positive answer. A more holistic approach to the matter, however – one that integrates standard general-equilibrium economics, political economy, and the comparative history of agricultural revolutions – suggests, on the contrary, that the pro-poor potential of MV's has largely been lost due to: (1) the insertion of MV's into social systems favoring urban groups and their big farmer suppliers; (2) demographic dynamics making labor cheaper relative to land; and (3) research structures prioritizing fashionable topics rather than genuine needs of the poor. Responsibility to study and realize the pro-poor potential of MV's within actual sociopolitical systems rests especially on international researchers; only they are relatively immune from pressures to steer research away from the needs of the poor. A 23-page bibliography (1894–1985) is appended.

**062** **PN-AAU-381**

**MF $2.16/PC $23.01**

### Proceedings of the workshop : strengthening agricultural research in Latin America and the Caribbean

International Maize and Wheat Improvement Center; Inter-American Development Bank; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
(Workshop on Strengthening Agricultural Research in Latin America and the Caribbean, Mexico City, MX, 10-12 Sep 1984)
1985, 177p. : charts, statistical tables, En
936411101

Proceedings are presented of a September 1984 workshop sponsored by the Inter-American Development Bank and held at the International Maize and Wheat Improvement Center in Mexico City. Six major papers reviewed the framework for agricultural research in Latin America and the Caribbean by covering the following topics: (1) supply and demand projections for agricultural products to the year 2000, including effects of expanding income, urbanization, and technologies; (2) the current state of research institutions in the region, especially those publicly supported; (3) present and future implications of conventions used to organize agricultural research (i.e., by commodities or by disciplines); (4) the emerging practice of on-farm research and how it is integrated with more traditional research using experiment stations and extension systems; (5) the potential contributions of biotechnology and ways in which national, regional, and international organizations can cooperate to exploit it; and (6) professional staff and sources of training for the national programs. Commentators' discussions and a list of participants are included.

**063** **PN-AAR-217**

**MF $1.08/PC $4.42**

### Plan of action for forage genetic resources

Davies, W. Ellis
U.N. Food and Agriculture Organization. International Board for Plant Genetic Resources; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
Jun 1984, v, 30p. : En, AGPG: IBPGR/83/24
9310056; 936411111

The conservation of forage germplasm has been relatively neglected, compared with that for crops which are used directly as food for humans. In this report, the present state of forage germplasm resources and major repositories in temperate, tropical/subtropical, and Mediterranean and adjacent arid/semiarid areas are reviewed. Information is also presented on storage conditions and on the degree to which important collections are documented. The need to evaluate the adequacy of collections is briefly addressed, along with the special problems facing such evaluation. Finally, those genera and species to which collection priority should be given are listed, and a 5-year plan of action for the International Board for Plant Genetic Resources (focusing on special training courses and on compiling a global database of forage germplasm resources) is outlined.

**064** *** PN-AAR-575**

**MF $1.08/PC $5.59**

### Guidelines for diagnostic work in plant virology

Green, S.K.
Asian Vegetable Research and Development Center
*AVRDC technical bulletin, no.15*, 1984, 39p. : ill., En, AVRDC publication 84-207
936411105
** Asian Vegetable Research and Development Center, Shanhua, Taiwan, ROC*

Intended as a guide for extension workers carrying out diagnostic work in plant virology, this handbook provides basic background information on plant viruses and their identification.

The handbook first outlines plant virus disease symptoms, including general manifestations, color deviations, and malformations of leaves, flowers, fruits, stems, and roots; also noted are masking of symptoms, tolerance, mixed infections, and phenomena that cause symptoms resembling those of viral infections. Virus transmission – by sap, grafting, dodder (parasitic plant), insects, mites, and nematodes – is next reviewed. A section on virus identification includes methods for determining virus size and shape, physical properties, host range, and insect vectors; serological identification is also covered. Final chapters describe virus storage and disease control.

A 61-item bibliography (1940–82) is appended.

**065** *** PN-AAR-760**

**MF $2.16/PC $22.10**

### Bibliography on bean research in Africa : supplement 1984

Lopez S., Jorge
International Center for Tropical Agriculture
Dec 1984, iv, 164p. : En
936411104
** Photocopies of citations available from: Bean Information Center, Communications and Information Support Unit, CIAT, Apartado Aereo 6713, Cali, Colombia*

Developed for researchers interested in *Phaseolus* bean production in Africa, this 1984 supplement to the ongoing bibliography of bean research contains 358 entries, 200 of which include abstracts; many of the entries were contributed by African researchers.

Following a section on general citations, the entries are organized by country to highlight national-level and other country-specific research papers; citations on new countries - including the Central African Republic, Ivory Coast, Lesotho, and Senegal - have been added. Within each country, citations are arranged alphabetically by author. An enriched subject index recording cultivars, varieties, and lines is preceded by author and title indexes. Abstracts of 138 documents cited in the 1983 issue are appended.

**066** *** PN-AAS-492**

**MF $2.16/PC $15.60**

### Potato atlas = Atlas de la pomme de terre = Atlas de la papa

Horton, Douglas E.; Fano, Hugo
International Potato Center; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
1985, 135p. : charts, maps, statistical tables, En, Es, Fr
936411107
** International Potato Center, Apartado 5969, Lima, Peru*

One of the International Potato Center's (CIP's) principal tasks is to disseminate information on world potato production and use. This compilation of statistical tables, figures, and maps is designed to provide policymakers and scientists with information that can be used to promote the potato as a nutritious food crop.

The information is collected under the following topic headings: summary information on potato production, foreign trade, and nutrition; regional trends in potato production, area, and yield; developing market economies ranked in terms of selected aspects of potato production and use; and country-level and regional data. The introduction, table of contents, notes, glossary, and list of countries are printed in English, French, and Spanish.

**067** *** PN-AAT-234**

**MF $2.16/PC $14.43**

### Jojoba : new crop for arid lands, new raw material for industry

National Academy of Sciences. National Research Council. Office of International Affairs. Board on Science and Technology for International Development; U.S. Agency for International Development. Office of the Science Advisor
1985, vii, 102p. : En
9365538
DAN-5538-G-SS-1023-00
** BOSTID, National Research Council, 2101 Constitution Avenue, NW, Washington, DC 20418 USA*

A promising start has been made since 1982 in the southwestern United States and in many other areas in the commercial cultivation of jojoba, a plant native to Mexico's Sonora desert and noted for its unique oil. Due to the purity, lack of odor, and resistance to rancidity of jojoba oil, it is being increasingly used in cosmetics; but, with its precise and narrow range of carbon chain lengths and uniform double bonds, it also shows promise as a basic product for the chemical industry. However, the crop is so new and current production so small that, as of 1985, its profitability and the eventual size and identity of its markets can only be surmised.

This book presents objective information about the current status of jojoba. Individual chapters cover the plant's characteristics and production, the properties of jojoba oil, the uses of and markets for jojoba oil, commercial uncertainties, jojoba industry needs, and research needs; the uncertainties inherent to jojoba production are highlighted to point out the economic risks for farmers and investors and to offer some guidance to researchers interested in jojoba. Appendices review jojoba outside North America and list sources of further information (associations, information services, reference sources, books, and journal articles).

**068** *** PN-AAR-763**

**MF $1.08/PC $8.58**

### Review of fertilizer use research on sorghum in India

Tandon, H.L.S.; Kanwar, J.S.
International Crops Research Institute for the Semi-Arid Tropics; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
*ICRISAT research bulletin, no.8*, 1984, viii, 59p. : charts, maps, statistical tables, En
936411106
** International Crops Research Institute for the Semi-arid Tropics, Patancheru P.O., Andhra Pradesh 502324, India*

Sorghum, the third most widely grown crop in India after rice and wheat, constitutes the staple food of much of the population. This bulletin reviews soil fertility and fertilizer use research on grain sorghum in India since 1960, covering all nutrients, soil/climate conditions, and seasons in which the crop is grown.

Following are the major conclusions of the review. Deficiencies of nitrogen (N), phosphorus (P), and zinc (Zn) are widespread under both rainfed and irrigated conditions. High-yield cultivars have shown greater responses than have local cultivars, and invariably both N and P have shown additive effect. Split application of N is generally more effective than a single dose. About 62.5% fertilizer N is recovered by sorghum from alfisols and 55% from vertisols. Drilling of phosphate is more effective than broadcasting. Potassium (K) responses can only be observed in long-term experiments. Zn responses have been reported, especially in vertisols where available Zn is with less than 1.2 parts per million. In the post-rainy season, responses to N depend on the cultivar and the nitrate-N level of the soil. The optimum N level for sorghum is 60-120 kg/ha in the rainy season, 25-85 kg/ha in the post-rainy season, and 80-150 kg/ha in the summer season.

Overall, the review indicates a dearth of studies on the relationship of fertilizer responses to soil fertility and environment. Although it is shown that fertilizer use is the key to increased sorghum production, few data are available on nutrient-moisture interactions and their management. A 273-item bibliography (1960-84) is appended. (Author abstract modified)

BEST COPY AVAILAB

# AGRICULTURE

**069** *** PN-AAR-795**

**MF $2.16/PC $15.86**

### Fertilizer subsidies in developing countries

Harris, Gene T.
International Fertilizer Development Center; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
*Special publication / International Fertilizer Development Center, no.SP-3,* Dec 1984, x, 121p. : statistical tables, En
9310054
** International Fertilizer Development Center, P.O. Box 2040, Muscle Shoals, AL*

Short papers are presented describing the status of fertilizer subsidies in 17 developing countries: Argentina, Burkina Faso, Chile, Colombia, Gambia, India, Indonesia, Ivory Coast, Nepal, the Philippines, Saudi Arabia, Sierra Leone, Sri Lanka, Turkey, Venezuela, Zambia, and Zimbabwe. Main themes treated include the purpose of subsidies and how they are set, as well the amount, extent, and cost (including budget cost) of subsidies. It is noted that the countries included in the report have widely diverse fertilizer subsidy experiences – some currently have subsidies, others have removed them or plan to do so, and one (Venezuela) has removed and reinstated them. Zimbabwe was included as an example of how emphasis on market for crops has replaced the need for subsidies. A brief overview and comparison is provided in an executive summary.

**070** *** PN-AAS-857**

**MF $1.08/PC $4.94**

### International fertilizer market information sources

Chuang, Yao H.
International Fertilizer Development Center; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
*IFDC reference manual, no.R-4,* Mar 1984, viii, 31p. : En
9310054
** International Fertilizer Development Center, P.O. Box 2040, Muscle Shoals, AL 35660 USA*

Continuous monitoring and assessment of international markets in key fertilizer products, raw materials, and intermediates are vitally important in determining fertilizer supply and marketing strategies. This reference work first identifies the types of information essential to fertilizer decisionmakers, e.g., data on changes in fertilizer production capacities and supply and demand balances, and on prices, the ocean freight market, and the inflation rates of exporting countries. Specific data needs are outlined for the following materials/intermediates – phosphate rock, sulfur, natural gas, liquified natural gas, naphtha, fuel oil, anhydrous ammonia, sulfuric acid, phosphoric acid (wet process) – and for finished fertilizer products.

Next, four major types of information sources are described: (1) publications offered by commercial and noncommercial organizations for general distribution; (2) computerized data services available by subscription; (3) organizations with unpublished data files and reports obtainable on request; and (4) international conferences and meetings held regularly or occasionally by commercial or noncommercial organizations.

**071** **PN-AAT-803**

**MF $1.08/PC $10.79**

### Manual técnico de conservación de suelos (Technical manual of soil conservation)

Peru. Ministry of Agriculture; U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Peru
Sep 1985, 21p. + 4 attachments : ill., chart, Es
5270220

As part of Peru's national soil conservation (SC) campaign, test plots on small farms will be used to demonstrate SC techniques and benefits. This illustrated manual, for use by extension agents, presents SC practices appropriate for Peruvian farmers. First, guidelines to selecting, establishing, and managing SC test plots and concomitant training are presented. Subsequent sections provide detailed instructions for: building an A level (an instrument to control the depth and design of terraces, furrows, and seepage ditches); constructing water absorption terraces; developing optimum designs for terrace planting and walkways; transplanting nursery plants; and digging contour furrows. Next, a system for rehabilitating native pastures – which involves natural reseeding, rotation of pasturage, ditches, and drainage basins – is described. SC methods for forests and fruit orchards are also presented, including replanting native trees, reducing excessive rainwater run-off, and spreading mulch to prevent evaporation and to foster earthworm communities. Finally, methods for controlling erosion from rainwater run-off are described.

**072** *** PN-AAU-190**

**MF $1.08/PC $8.06**

### Bibliography on soils, fertilizers, plant nutrition and general agronomy in Ethiopia

Haque, I.; Beyene, Desta; Sahlu, Marcos
International Livestock Centre for Africa. Library and Documentation Services; International Livestock Centre for Africa. Highlands Programme; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
1985, vii, 55p. : map, En
936411109
** International Livestock Centre for Africa, P.O. Box 5689, Addis Ababa, Ethiopia*

Presented here is the first comprehensive bibliography of research in Ethiopia on soils, fertilizers, plant nutrition, and general agronomy. A total of 853 citations (most dating from 1970–84) are presented under five main subject headings (documentation; general information; geology/biogeography; soils; and crops and cropping systems). The majority of the citations concern applied soil and cropping research. Subject, author, and institution indexes are included.

**073** **PN-AAR-136**
**MF $1.08/PC $3.90**

### Administering an interdisciplinary project : some fundamental assumptions upon which to build

Mayfield, James B.; Naguib, Mohamed
Colorado State University. Engineering Research Center; Consortium for International Development; Egypt. Ministry of Irrigation. Water Distribution Research Institute. Water Research Center; U.S. Agency for International Development. Bureau for Near East. Egypt
*EWUP technical report, no.14*, Jun 1984, v, 23p. : En. Ar
2630017
AID/NE-C-1351

An interdisciplinary project, such as the Egypt Water Use and Management Project, evolves around a set of fundamental situations which are present from the beginning of the project. These situations are: (1) contrasting working perspectives between the project's technical and extension experts; (2) different perceptions regarding the involvement of farmers in the project; (3) different communication patterns which a project may follow; and (4) specific staff/farmer patterns which can emerge in the work of the project. Each situation is described in this report, and the consequences of selecting the different aspects of each situation are presented. All interdisciplinary projects need to take into consideration the above-mentioned situations and how the choices a project makes will influence the outcome of the project's work. Appendices include a table of Egyptian measures and their American equivalents. (Author abstract, modified)

**074** **PN-AAR-403**
**MF $1.08/PC $5.59**

### Developing local farmer organizations : a theoretical perspective

Mayfield, James B.; Naguib, Mohamed
Colorado State University. Engineering Research Center; Consortium for International Development; Egypt. Ministry of Irrigation. Water Distribution Research Institute. Water Research Center; U.S. Agency for International Development. Bureau for Near East. Egypt
*EWUP project technical report, no.68*, Jun 1984, ii, 36p. : En, Summaries in Ar
2630017

Development of water users' associations, or any other type of farmer organization, can result in the adherence of change agents (rural extension facilitators) to particular theoretical parameters. These theoretical parameters are discussed in this paper in order to sensitize individuals involved in organizing farmers to some fundamental conditions which affect the development of farmer organizations.

One theoretical foundation of an organization is the development of participatory leadership. Leadership development is a continual process emphasizing motivation, action, consequence, and reaction. A well-functioning leadership group facilitates cooperation between villagers and government agencies, develops training programs to teach the population to become more self-reliant, generates income to finance programs, performs needs assessments, and provides solutions to problems in order to motivate people to cooperatively perform necessary tasks. Change agents work to develop leadership by developing popular awareness, conducting the above-mentioned activities, and implementing the concept of cooperative action among group members. (Author abstract, modified)

**075** **PN-AAT-420**
**MF $1.08/PC $10.01**

### Economic and technical criteria for location of deep and shallow tubewells : a consultancy report

Johnson, Sam H. III
International Agricultural Development Service; Bangladesh Agricultural Research Council; U.S. Agency for International Development. Bureau for Asia. Bangladesh
Apr 1985, ii, 60p. + attachments : charts, maps, statistical tables, En, WM-15-85
3880051

Social, economic, and technical factors involved in tubewell installation in Bangladesh are discussed, and eight criteria combining these factors are developed for installing four types of tubewells - shallow tubewells (STW's), deep tubewells (DTW's), hand-operated tubewells (HTW's), and deep sunk shallow tubewells (DSSTW's) - in specific locations. A final section compares the criteria against current groundwater development efforts.

It is concluded that present and planned tubewell efforts do not agree with the criteria, mainly because of inappropriate government subsidies for DTW's. Although DTW's are required in areas where STW's and DSSTW's are not technically feasible, subsidies have encouraged DTW installation in some of the best water-endowed areas in the country and so have increased rather than decreased regional income disparities. Generally, it is recommended that STW's be installed wherever conditions are suitable, and that excessive subsidies for DTW's be eliminated. In light of the country's growing trend toward privatization, regulation at the macro level, e.g., through zoning rules permitting only one type of tubewell in a given area, are advised. Appendices provide, inter alia, lists of upazilas (subdistrict administrative units) and data from a recent groundwater investigation study.

**076** **PN-AAT-686**
**MF $2.16/PC $20.67**

### African irrigation overview, volume 1 : summary

Moris, Jon R.; Thom, Derrick J.; et al.
Utah State University. Dept. of Agricultural and Irrigation Engineering; Consortium for International Development; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture; U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Haiti
*WMS report, no.37*, Oct 1985, xxiv, 97p. + 2 appendices : statistical tables, En
*V.3: PN-AAT-687*
9364127
DAN-4127-C-00-2086-00

The basic issue addressed in this continent-wide overview of Africa's irrigation experience is how A.I.D. can best promote irrigation that will help African nations achieve food security.

First, 75 lessons learned from Africa's irrigation experience are presented (covering: irrigation potential versus demand; soils; existing systems; engineering; agronomy; environmental impact; social and economic factors; and institutional aspects), followed by 25 more specific rules of thumb for project designers and field staff. The remainder of the review assesses the implications of these lessons for donors, examining 15 points on which donor policy decisions are required prior to investment and identifying the 9 most significant gaps in research or institutional effort which currently constrain irrigation. The authors suggest that A.I.D. give first priority to strengthening irrigation capabilities both within the USAID system and in host nations; other areas of importance are, inter alia, cooperation with other donors more active in African irrigation, inclusion of irrigation in farming systems research projects, support for remote-sensing drought warning systems, and further attention to small-scale irrigation. Appendices include summaries of four technical working papers used in compiling this volume, and 12 pages of references (1963-85).

**077** *** PN-AAS-592**
**MF $1.08/PC $9.36**

### Sheep and goats in humid West Africa : proceedings of the workshop on small ruminant production systems in the humid zone of West Africa, held in Ibadan, Nigeria, 23-26 January 1984

Sumberg, J.E.; Cassaday, K.
International Livestock Centre for Africa; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
(Workshop on Small Ruminant Production Systems in the Humid Zone of West Africa, Ibadan, NG, 23-26 Jan 1984)
May 1985, v, 74p. : charts, statistical tables, En
936411109
* *International Livestock Centre for Africa, P.O. Box 5689, Addis Ababa, Ethiopia*

Eleven papers constitute these proceedings of a workshop held in Nigeria in January 1984 on small ruminant production systems in West Africa's humid zone. The papers were prepared by individuals involved in sheep and goat research in the zone and are presented together in order to promote a holistic appraisal of the prospects for further development of small ruminants as a livestock resource. After two papers on general aspects of the subject, the remaining papers discuss: (1) disease profiles of sheep and goats in two groups of villages in southwest Nigeria; (2) a serological survey of viral goat infections in southern Nigeria; (3) growth and reproduction rates of West African dwarf goats under high levels of feeding and management; (4) feed intake and weight gain of West African dwarf goats; (5) goat management research at the University of Ife; (6) small ruminant feed production within a farming systems context; (7) small ruminant production under resource pressure in southeast Nigeria; (8) models of improved small ruminant production systems; and (9) market potential for small ruminant production in southwest Nigeria. References are provided with each paper.

**078** *** PN-AAT-239**
**MF $6.48/PC $65.26**

### Resúmenes analíticos sobre pastos tropicales (Analytical reports on tropical pastures)

International Center for Tropical Agriculture; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
v.7, Apr 1985, 3v. : Es
9364111
* *CIAT, Apartado Aero 6713, Cali, Colombia*

As a specialized guide to the literature on tropical pastures, this annotated bibliography contains analytical abstracts of current research and related activities in tropical pastures, grasses, and legumes. The bibliography presents information condensed from magazine articles, brochures, mimeographed bulletins, theses, manuals, and other conventional and nonconventional materials. The entries are classified under major headings: botany, taxonomy, and phytogeography; plant physiology; agronomy; phytopathology; entomology and pest control; plant genetics and improved varieties; establishment and management of grassland; animal production economics, development, and systems; soils; animal nutrition; and animal health and husbandry. Each entry contains a brief abstract, a list of main topics covered, and the botanical names of plants under study. Author and subject indexes are provided.

**079** *** PN-AAT-879**
**MF $1.08/PC $4.16**

### International Board for Plant Genetic Resources : IBPGR working group on forages for Mediterranean and adjacent semi-arid / arid type areas

U.N. Food and Agriculture Organization. International Board for Plant Genetic Resources; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
(Report of a Working Group on Forages for Mediterranean and Adjacent Arid / Semi-Arid Areas, Limassol, CY, 24-26 Apr 1985)
Jun 1985, 29p. : ill., En, AGPG:IBPGR/85/89
936411111
* *International Board for Plant Genetic Resources, Crop Genetic Resources Center, Food and Agriculture Organization of the United Nations, Via delle Terme de Caracalla, 00100 Rome, Italy*

Presented in the form of minutes from an April 1985 conference of an International Board for Plant Genetic Resources working group, this report reviews the status of forage germplasm collections. The group reviewed: (1) existing active and reserve collections (i.e., large collections at Adelaide and Perth in South and Western Australia, respectively, and the International Center for Agricultural Research in the Dry Areas (ICARDA) in Syria, as well as a number of smaller collections); (2) priority taxa for genera and species on the basis of extent of genetic erosion, the potential for development and/or breeding of new cultivars, and the comprehensiveness of existing collections (tables listing genera/species, collecting priorities, and interested country are included); (4) lists of descriptors for characterizing grasses and forage legumes; (5) available computer facilities and data bases; (6) a 1985-89 action program to collect priority species; and (7) the need for hands-on training in national forage programs. Appended is a list of forage legume accessions to world germplasm collections as of March 1985.

**080** **PN-AAS-272**

**MF $1.08/PC $9.88**

### Milkfish production dualism in the Philippines : a multidisciplinary perspective on continuous low yields and constraints to aquaculture development

Chong, Kee-Chai; Lizarondo, Maura S.; et al.

U.N. Food and Agriculture Organization; Philippines. Ministry of Agriculture. Bureau of Agricultural Economics; Philippines. Bureau of Fisheries and Aquatic Resources; International Center for Living Aquatic Resources Management; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture

*ICLARM technical reports, no.15,* 1984, vi, 70p. : charts, map, statistical tables, En, ICLARM contribution no. 206

9311050

Perennial low milkfish yields from underutilized brackish water ponds in the Philippines result primarily from the low fertilizer application rates of most farmers. The purpose of this study, based on a 1981 survey of 447 milkfish farmers in four climatic zones and on data from a previous survey of 324 farmers, was to determine constraints on more intensive fertilizer application.

Of 56 socioeconomic, institutional, physical, and biotechnical variables tested, 8 were found to explain 73% of the variance in fertilizer use. The most significant variables were the ratios of milkfish price to organic and inorganic fertilizer prices, farmers' interest in working on other milkfish farms, and farmers' opinions regarding the effect of fertilizers on the taste of milkfish, followed by pond soil salinity, farmers' interest in seeking consultation, family size, and farmers' estimate of a fair collateral requirement for loans. It was concluded that milkfish farmers are responsive to relative prices of inputs and outputs and will adjust their fertilizer expenditure accordingly; high costs of credit and of organic fertilizers in some locations coupled with declining real milkfish prices often inhibit increased fertilizer use. The authors conclude that strengthened institutional support is necessary to accelerate the milkfish industry's ongoing transformation to higher yields and recommends a dual fertilizer pricing policy, increased production credit, and intensified extension services.

Included are 48 tables and figures, 35 references (1962–83), and a copy of the survey instrument. (Author abstract, modified)

**081** **PN-AAS-544**

**MF $1.08/PC $10.92**

### Working bibliography on East African fisheries

Hendrix, Melvin K.; Brainerd, Theophilus R.; Omara-Alwala, Thomas

University of Rhode Island. International Center for Marine Resource Development; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture

Jun 1984, xv, 67p. : En, no.83/84-002

9364024

Defining East Africa broadly to include both the nations which bound the Great Lakes and the island nations in the Indian Ocean, this bibliography cites almost 600 sources of information on diverse aspects of the various types of fisheries found in the region. Contents are divided into two main sections. General topics include lake and inland, marine, and aquacultural fisheries, as well as gear and technology and nautical terminology. A section on national fisheries cites references on freshwater, marine, aquacultural, and swamp and flood plain fisheries and on preservation and marketing concerns in 12 countries. Entries in each section are listed alphabetically by author or publisher, and subject and author indexes are provided. It is noted that the references are comprehensive and in some cases exhaustive, but are not derived from holdings at the International Center for Marine Resource Development library. Sources cited are in French and English and span the period 1837–1984.

**082** **PN-AAS-545**

**MF $2.16/PC $13.52**

### Title XII project to assist in the development of in – country production of brine shrimp (Artemia) for use as food for aquaculture organisms in Indonesia

Maugle, Paul D.

University of Rhode Island. International Center for Marine Resource Development; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture; U.S. Agency for International Development. Bureau for Science and Technology. Office of Technical Review and Information

6 Aug 1984, 33p. + 5 appendices : ill., chart, map, statistical tables, En

9311282; 9364024

The Government of Indonesia (GOI) is planning to build 266 hatcheries in order to alleviate a shortage of brine shrimp (*Artemia*) cysts which is drastically limiting hatchery production of post-larval shrimp. The potential for USAID/I assistance to this project is evaluated in this consultant's report. The report estimates the quantity of brine shrimp needed, notes the danger of import dependence, and assesses the potential for large-scale integrated *Artemia*-salt production; a USAID/I pilot project to produce *Artemia* in industrial salt ponds is recommended over and above any USAID/I assistance to the GOI project.

The potential for small-scale development at *Artemia* demonstration ponds then is assessed, and constraints on such development are identified. Observations are reported on the in-hatchery production of brine shrimp at three sites, including their limitations, and on the results of a site visit to potential brine shrimp and penaeid shrimp culture sites in Northwest Java. Recommendations address the political and financial aspects of the proposed GOI project, brine shrimp pond production strategies, and training requirements. Appendices include, inter alia, a schematic outline of larval feeding practices; diagrams for the layout of salt farms on Madura Island; a description of the water reuse system used for *Artemia* culture at Prigi hatchery; and a manual on the production of *Artemia* in salt ponds in the Philippines.

# AGRICULTURE

**083** **PN-AAS-927**
**MF $2.16/PC $15.47**

### Overfished stocks, undernourished people, and underbenefited coastal states of Western Africa : opportunities for marine fisheries management and development

Posner, Gerald S.; Sutinen, Jon
U.S. Agency for International Development. Bureau for Africa. Office of Regional Affairs
20 Jun 1984, ii, 46p. + 6 appendices : En
6980510
PASA BAF-0510-P-CC-4065-00

Due to full or overexploitation, fish stocks in most West African fisheries are at risk and fishing must be reduced immediately. So concludes this report, which documents and analyzes fish stocks and the fishing industry in West Africa; examines and evaluates relevant governmental and multinational institutions, training, and donor activities; evaluates the prospects for fisheries development and management in the region; and proposes a corresponding A.I.D. strategy.

Specific recommendations for A.I.D. are to: (1) establish a regional pilot fish management program for demersal species of finfish from Morocco to Sierra Leone; (2) create a highest-level seminar for key fishery personnel, mainly in northwest Africa, where infrastructure is most developed; (3) implement a training program at the doctoral, baccalaureate, on-the-job, and extension levels; (4) help reduce postharvest losses and expand the distribution and marketing network by establishing a regional project in the artisanal fisheries which account for 70% of the fish caught by West Africans themselves (60% of the overall catch is by foreign fleets); (5) establish an information system serving both A.I.D. and West African countries; and (6) promote the long-range planning by individual governments needed to actualize the great potential for developing West Africa fisheries. A budget for these activities is included. Appendices include supporting statistics and figures, individual country analyses, and a supporting economic analysis.

**084** **PN-AAS-956**
**MF $1.08/PC $3.38**

### Salinity tolerance of the tilapias : Oreochromis aureus, O. niloticus and an O. mossambicus X O. niloticus hybrid

Watanabe, Wade O.; Kuo, Ching-Ming; Huang, Mei-Chan
Taiwan. Council for Agricultural Planning and Development; International Center for Living Aquatic Resources Management; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
*ICLARM technical reports, no.16,* 1985, iii, 22p. : ill., charts and graphs, En, ICLARM contribution no. 209
9311050

The ontogeny of salinity tolerance was studied in the tilapias *Oreochromis aureus*, *O. niloticus*, and an *O. mossambicus* x *O. niloticus* (M x N) hybrid, spawned and reared in freshwater. Several indices were employed as practical measures of salinity tolerance: (1) median lethal salinity-96 hours, defined as the salinity at which survival falls to 50% 96 hours after transfer from freshwater to varying salinities; (2) mean survival time, defined as the mean survival time over a 96-hour period following direct transfer from freshwater to seawater (32 ppt); and (3) median survival time, defined as the time at which survival falls to 50% following direct transfer from freshwater to seawater. The ontogenetic changes observed in salinity tolerance were determined to be more closely related to body size than to chronological age. No consistent relationship was observed between salinity tolerance and condition factor. Results confirm earlier research indicating that *O. mossambicus* and *O. niloticus* hybrids have a superior salinity tolerance. Combination of hybridization with a maximization of early freshwater growth through temperature control and hormone application should optimize conditions for economical culture of tilapia in brackish water or seawater. (Author abstract, modified)

**085** **PN-AAL-060**

**MF $2.16/PC $15.08**

### School feeding programs in developing countries : an analysis of actual and potential impact

Levinger, Beryl

Columbia University. Teachers College. Horace Mann – Lincoln Institute; U.S. Agency for International Development. Bureau for Food for Peace and Voluntary Assistance. Office of Program, Policy and Evaluation

*AID evaluation special study, no.30,* Jan 1986, x, 99p. + bibliography : statistical table, En

Studies of the effects of school feeding programs (SFP's) on student attendance and enrollment, nutritional status, and cognitive development are assessed.

Regarding SFP impact on attendance and enrollment: (1) 3 retrospective analyses and 6 comparative studies proved inconclusive, although the latter suggest that SFP's may be most effective in poorer areas where attendance is low, and that program regularity is a key factor; (2) of 8 studies covering 11 countries and based mainly on teachers' impressions, 7 noted a positive impact of SFP's on attendance and enrollment, although methodological imprecisions make these findings suspect.

Studies from Guatemala and Nepal on the general impact of nutritional status on school attendance were reviewed. Both suggested that SFP's designed to improve nutritional status will indirectly improve attendance and performance as well. The Nepal study also found that the influence of nutritional status on enrollment may differ between boys and girls.

Regarding cognitive development: (1) general studies of the relation of diet to cognitive development showed a positive correlation between the two, but also that a climate of poverty compounds dysfunctions due to malnutrition; (2) of 4 studies of the specific impact of SFP's on cognitive development, 2 lacked baseline data and proved inconclusive, while the other 2 suggest that exogenous factors affect performance as much as SFP's themselves, but also that SFP's are not designed to mitigate these factors; (3) 6 studies of short-term behavioral effects of SFP's provided conflicting results, but suggest that the provision of breakfast may enhance performance; (4) 5 studies of long-term behavioral effects of SFP's were seriously flawed methodologically.

The report also examines how SFP's can help improve a school system's efficiency, especially in relation to attendance and academic performance. A final section proposes recommendations for operations research on 3 issues – the changes SFP's promote and for whom they promote them, the interdependence of these changes, and the ideal SFP design. A 9-page bibliography (1949–83) is appended.

**086** **PN-AAP-341**

**MF $1.08/PC $1.69**

### Training course on preservation of tropical fruits and vegetables by solar drying with supplemental heat

Hoyt, Kenneth D.; Swanson, Marilyn A.

University of Idaho. Postharvest Institute for Perishables; Visayas State College of Agriculture. Root Crop Research and Training Center; U.S. Agency for International Development. Bureau for Asia. Philippines

*GTS report : PIP/Philippines/June–Aug/83, no.9,* Jan 1984, 10p. : En

9311323

AID/DSAN–CA–0265

The University of Idaho Postharvest Institute for Perishables collaborated with Visayas State College of Agriculture (VISCA) in the Philippines to construct and test three solar fruit and vegetable dryers and to train farmers in the construction, operation, and application of food dryers.

The report first describes the preparatory work done at the University of Idaho in which a prototype solar dryer, equipped with a supplementary heat component using charcoal or other fuel to permit drying on cloudy days, was constructed, and a training course and manuals on solar drying and food processing of tropical crops were developed. Next, the in-country training course conducted for 15 VISCA participants (who, in turn, would train village farmers) is reviewed. Its five phases included: (1) dryer planning and design; (2) solar food drying fundamentals and construction; (3) dryer testing and modification, handbook preparation, and village course planning; (4) community training through workshops; and (5) course evaluation. The report concludes that the course was well received by participants and villagers and that the new technology was readily learned and accepted; future efforts should focus on research and extension.

**087** *** PN-AAQ-307**

**MF $2.16/PC $15.86**

### Constraints on Kenya's food and beverage exports

Schluter, Michael

International Food Policy Research Institute; University of Nairobi. Institute for Development Studies

*Research report / International Food Policy Research Institute, no.44,* Apr 1984, 118p.: En

*Bibliography: p.111–118*

936411114

** IFPRI, 1776 Massachusetts Ave, NW, Washington, DC USA 20036*

Kenya's location and agricultural base suggest great potential for exporting food and beverages to oil–exporting countries in the region. This report examines international and domestic constraints to the expansion of Kenya's food and beverage exports.

Following a description of the research methodology, which included the use of a disaggregated nominal protection coefficient, potential markets among oil exporters are analyzed. Eight Kenyan commodities are then suggested for possible export – coffee, tea, beef, sheep and goats, sugar, maize, pulses, and horticultural crops. For each commodity, the domestic border price (comprising the producer price, transport costs, and marketing margins) is compared with the export parity price (the market export price less duty, freight, and insurance costs); the potential for reducing each cost component is then analyzed. Next, five Kenyan marketing institutions are examined with regard to their economic efficiency and social desirability for handling commodity processing and export. Finally, the political implications of exporting food are discussed. The report concludes that Kenya's agricultural export strategy should focus on high-value, low-volume crops that minimize demands on high-cost infrastructure.

The text includes 54 tables and a 156-item bibliography (1938-83).

**088 PN-AAQ-583**

**MF $1.08/PC $2.86**

### Changing a post - harvest system : impact of diffused light potato stores in Sri Lanka

Rhoades, Robert E.

International Potato Center; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture

*IPC social science department working paper, no.1984-1,* Aug 1984, 22p. : En, Es

9310973; 936411107

Conditions in Sri Lanka's main potato producing regions in 1980 - rising costs of foreign seed, unavailability of seed at optimal planting times, heavy losses in handling and storage, government concern with foreign exchange, and extension involvement - were conducive to the introduction of low-cost diffused light storage (DLS), a new post-harvest technology using natural indirect light instead of low temperature to control excessive sprout growth and associated storage losses. This initial study of the adoption and impact of the technology presents the policy and farming environment into which DLS was introduced into Sri Lanka and discusses how DLS is being adopted by Sri Lankan farmers. The study concludes by illustrating the technology's important consequences, not only in cutting storage losses, but in raising yields, changing cropping patterns, reducing dependency on foreign seed imports, saving foreign exchange, and bringing prestige to the national potato research and extension programs. Five tables, five diagrams, one map, and a list of 14 references cited (1963-83) are included. (Author abstract, modified)

**089 PN-AAS-059**

**MF $2.16/PC $16.25**

### Educación sobre nutrición para trabajadores de planificación familiar (Nutrition education for family planning workers)

Smith, Sally S.

Development Associates, Inc.

Dec 1984, vi, 145p. : ill., statistical table, Es

A trainers' manual is presented for a program to teach Latin American family planning workers how to incorporate maternal and child nutrition information into family planning delivery programs. The manual consists of five units, each of which includes a pre-test, exercises, learning objectives, important ideas, and suggested activities and materials. These five units treat: (1) an introduction to nutrition (basic food groups, maternal and child nutrition, and malnutrition and its consequences); (2) the relationship between nutrition and family planning (effects of age, spacing of pregnancy, and family size on nutritional status of mother and child, relationships among breastfeeding, nutrition, and family planning); (3) effects of contraceptives on the nutritional status of women (nutritional effects of various contraceptive methods, family planning and breastfeeding, introducing lactating women to contraceptives, and community resources and systems for referring mothers to them); (4) breastfeeding (community views, preparing the mother for breastfeeding, problems and solutions); and (5) methods for evaluating lessons learned in the above chapters.

**090 * PN-AAS-924**

**MF $2.16/PC $12.87**

### Information sharing and consultation among major food aid donors

Hopkins, Raymond F.

International Food Policy Research Institute; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture; Canada. International Development Agency; European Community. Development Directorate - General of the European Commission

Dec 1984, vi, 93p. : En

936411114

* *IFPRI, 1776 Massachusetts Ave., NW, Washington, DC 20036 USA*

Cooperation among food aid donors, according to this report, can be enhanced by a four-step strategy: (1) charging a working group in each important recipient country with responsibility for preparing a common monthly report; (2) establishing and using a uniform reporting format; (3) regularizing consultations among senior donor officials; and (4) promoting joint conferences and staff training, using, where appropriate, the services of existing resources such as the International Food Policy Research Institute (IFPRI) and the Institute of Development Studies at the University of Sussex. These steps, it is argued, will make donor food aid more productive by reducing the costs of obtaining timely and corroborated information, increasing the availability of information, and reducing ineffective food aid programming, e.g., the provision of aid in unmanageable fashion or to unrewarding projects.

Appendices discuss food aid administration in the European Community, the United States, and Canada; present phone listings for key donor food aid administrators; discuss the preparation of monthly country reports and the design of a food needs assessment; and present a uniform reporting format and a proposal for joint donor establishment of a training consortium. (Author abstract, modified)

**091** **PN-AAT-034**

**MF $1.08/PC $9.88**

### Adding a food consumption perspective to farming systems research

Frankenberger, Timothy R.
U.S. Dept. of Agriculture. Office of International Cooperation and Development. Technical Assistance Division. Nutrition Economics Group; U.S. Agency for International Development. Bureau for Science and Technology. Office of Nutrition
Jun 1985, viii, 65p. : charts, En
9311171
RSSA-BST-1171-R-AG-3125-01

Farming Systems Research (FSR) which ignores food consumption concerns is likely to be rejected by farmers. This report identifies several consumption concerns which should be incorporated into FSR projects: (1) the seasonality of production, which may cause annual periods of deprivation; (2) the danger to consumption in shifting from subsistence crops to non-food cash crops and non-indigenous food staples; (3) the impact on consumption of small farm income, the regularity of its reception, and whether it is received by men or women; (4) extensionists' neglect of women, despite their involvement – sometimes to the detriment of nutritional concerns – in food and cash crop production; (5) the extra food intake needed to sustain the extra labor involved in cultivating cash crops; and (6) the effects of market inefficiency, government trade policies, and production shortfalls, which can raise consumer prices while lowering small farmer purchasing power.

Ways are suggested for FSR teams to include these concerns in selecting a target area, conducting diagnostic baseline studies, formulating recommendation domains, and evaluating alternative technologies. Five FSR projects which included nutrition concerns are briefly described. A 6-page bibliography (1967-85) and a simplified dietary survey are among the appendices.

**092** **PN-AAT-653**

**MF $1.08/PC $5.20**

### Food production / consumption linkage : final report

Marlett, Melanie; Sambou, Marie
Consortium for International Development; Colorado State University; U.S. Agency for International Development. Bureau for Africa. Gambia
*Mixed farming and resource management project technical report, no.4*, Jul 1985, 13p. + 2 appendices : ill., charts, En
6350203

A.I.D.'s Mixed Farming Project Women's Program in The Gambia, discussed herein, addressed both women in development and the linkage between food production and consumption. The project introduced a maize/cowpea intercrop system to increase women's production of maize, a food crop which offers advantages over rice in nutrition, marketability, and reduced cultivation workload. Hand shellers and millers were distributed to ease maize processing. To improve food consumption, rural women were educated in nutrition principles (i.e., the importance of iron, protein, and vitamins) and practices (particularly weaning) and in proper methods of maize/cowpea processing and cooking; female extension workers conducted maize cooking demonstrations (55 in 1984-85 alone). With information provided by the project, the Gambian woman is able to use maize as a supplement to the family's rice-dominated diet and able to market maize for a sizable profit. Provided in appendices are the technical package used by extension workers and 14 maize and bean recipes.

**093** **PN-AAU-229**

**MF $1.08/PC $2.21**

### Methods for evaluating the nutritional impact of food aid projects : lessons from past experience

Sahn, David
International Food Policy Research Institute; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
*Food and nutrition bulletin, v.6(3)*, Sep 1984, p.1-16 : En
9364062; 936411114

Problems in quantifying the nutritional impact of food aid projects are examined in this paper, which also addresses widely held misconceptions concerning evaluation. A review of World Food Programme and P.L. 480 Title II evaluations reveals that problems in assessing nutritional impact often result from: (1) poorly conceived and designed projects that are not targeted to meet the nutritive needs of the people; (2) implementation constraints that cause projects to operate ineffectively; and (3) inappropriate evaluation methodologies, such as ambiguous or misdirected questions, incorrect selection of indicators, inaccurately performed measurements, and neglect of confounding factors. To develop more effective evaluations, the author suggests a two-tiered strategy that includes building evaluation procedures into food aid projects at the design stage (to improve both probability for project success and assessment of nutritional impact) and designing a series of small operational research studies to test vital hypotheses rather than try to determine impact per se.

**094** **PN-AAU-372**

**MF $2.16/PC $22.75**

### United States Food for Peace program : a compilation of informational materials on United States Public Law 480

International Trade and Development Education Foundation
1985, viii, 184p. : En

A compilation of informational materials on the P.L. 480 Food For Peace Program is presented. Part 1 traces the program's legislative history, relying heavily on analyses done by the Congressional Research Service. Part 2 draws upon unclassified documents made available by the U.S. Department of Agriculture and A.I.D. to describe the current implementation and interagency administration of the program, while Part 3 presents over 50 project descriptions, drawn from official reports and documents and covering three decades of program activity. Part 4 describes many of the major food aid program issues in the areas of marketing and foreign policy objectives, the use of food aid as an instrument of economic development abroad, and humanitarian and disaster relief assistance. A select bibliography of over 100 items (1955-84) and a list of GAO reports on P.L. 480 from 1976 to 1984 comprise Part 5.

# HEALTH

**095** **PN-AAR-515**

**MF $1.08/PC $10.92**

### Underfinancing of social services in Tanzania : the case of primary health care

Dunlop, David W.
U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Evaluation
Feb 1984, 56p. + attachments : statistical tables, En
ORT-0085-0-00-3167-00

In support of the Government of Tanzania's policy, initiated in the early 1970's, to expand rural primary health care delivery, A.I.D. has provided funding for maternal and child health (MCH) care improvements. This paper assesses the government's capacity for financing and sustaining its rural health care delivery system.

The paper first reviews the declining Tanzanian macroeconomic situation; the country's serious balance of payments problem (caused in part by unwise agricultural and economic policies) is discussed in regard to its effect on public financing of recurrent costs. Next, an analysis of the expansion since 1971 of the public health care sector details changes in demand for services, government and nongovernment health care expenditures, and recurrent public sector costs. Finally, the paper specifically addresses MCH utilization costs; this cost analysis, disaggregated by type of delivery facility, considers the implications of alternative utilization patterns and financing options. The paper concludes that Tanzania's rural health care system is being seriously underfunded, with major impact on service delivery.

A 41-item bibliography (1964-1983), 25 tables, and an appendix containing additional economic information on Tanzania's agricultural and industrial sectors are provided.

**096** **PN-AAS-326**

**MF $1.08/PC $3.25**

### Summary report : health officers' conference, Bureau for Latin America and the Caribbean, Gettysburg, Pennsylvania, 25-30 November, 1984

Harrison, Polly F.
Management Sciences for Health; U.S. Agency for International Development. Bureau for Latin America and the Caribbean
(Health Officers' Conference, Gettysburg, PA, US, 25-30 Nov 1984)
Jan 1985, 24p. : En

Proceedings of a November 1984 conference for health officers, hosted by A.I.D.'s Bureau for Latin America and the Caribbean and focusing on health sector financing and resource allocation, are presented. An initial section summarizes the main presentations made at the conference; issues include health needs versus health demands, the role of government in health financing, A.I.D. projects to improve health management, and alternatives to public sector financing (social security, prepayment schemes, and approaches based on the sale of pharmaceuticals). Presented next is a summary of conference views on issues which emerged as central during the conference – the complexity and breadth of health financing needs and the related problem of affordability, and the importance of resource allocation, policy dialogue, and donor coordination. A final section presents 29 recommendations reached in the plenary session regarding A.I.D. policy objectives, project design, human resource development and administration, and information needs and management.

**097** **PN-AAS-547**

**MF $1.08/PC $9.49**

### Report of a consultation on ORS supply and distribution in Nigeria

Quick, Jonathan
Management Sciences for Health; U.S. Agency for International Development. Bureau for Science and Technology. Office of Health
29 Mar 1985, 34p. + 5 annexes : statistical tables, En
9365927
DPE-5927-C-00-3083-00

The supply and distribution of oral rehydration solutions (ORS) within Nigeria's national control of diarrheal disease (CDD) program are assessed. After reviewing the current status of health services and the oral rehydration therapy program in Nigeria, the author presents various preliminary and 5-year estimates of ORS requirements and discusses the initial supply of ORS to public health services by donor agencies and mechanisms for long-term procurement by the services themselves; a discussion of distribution options and information requirements is included. The report's concluding sections treat commercial ORS distribution and, more briefly, local production and problems of organizing the national CDD program. Included are recommendations addressing these issues and a list of possible areas of future assistance from AID/W's PRITECH project (9365927). Appendices include population- and consumption-based estimates of ORS requirements, the text of a lecture by a UNICEF representative on Nigeria's child survival revolution, and a study presenting a recipe for a homemade sugar-salt solution for treating acute diarrhea.

**098** **PN-AAS-834**

**MF $1.08/PC $7.93**

### Local institutional development for primary health care

Doan, Rebecca Miles; Finin, Gerard; Uphoff, Norman
Cornell University. Center for International Studies. Rural Development Committee; U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural and Institutional Development
*Special series on local institutional development, no.4*, Oct 1984, x, 51p. : En, LID no.4
*Bibliography: pp.47-51*
9311096

Results are presented of a literature search on the role of local institutions in primary health care (PHC) delivery. An initial section describes local institutional options (local offices of a national agency, elected local government, self-help groups, cooperative and service organizations, and private providers) which can be used in promoting PHC and notes that a network of local institutions is preferable to a single entity. After discussing the need to enlist prudently the support of indigenous health practitioners, especially women, in PHC delivery, the relation of key PHC issues – access to health care, recurrent costs, preventive versus curative programs, cost/benefit perceptions, and public versus private goods and services – to local institutional alternatives is analyzed. A final section discusses the process of establishing local institutional networks, including the need for an institutional base, use of paraprofessionals, the comparative advantages of local institutions, and the stages of health care development. It is concluded that local institutions are essential to make PHC recipients participants in their own health improvement. Appended are 11 case studies of local institutional development found particularly instructive by the authors and a 57–item bibliography (1969–84).

**099** **PN–AAU–030**
**MF $2.16/PC $17.55**

### Field notes : communication for child survival

Academy for Educational Development, Inc.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Education; U.S. Agency for International Development. Bureau for Science and Technology. Office of Health
Oct 1985, 129p. : ill., charts, En
9311018
AID/DSPE–C–0023

Select activities over the period 4/81–5/85 of the AID–supported HEALTHCOM project's mass media campaign to promote Oral Rehydration Therapy (ORT) and other child survival practices in several developing countries are recorded in this collection of field notes. The effectiveness of visual media, especially an ORT poster and the instructions on Oral Rehydration Salts packets, are reviewed, as are several radio programs on infant nutrition, including a course on breastfeeding. Included are reports on the use of social marketing, the application of behavioral analysis to health communications, a diarrhea management workshop, the role played by formative evaluation in the project, and research conducted on traditional health systems in Swaziland. An implementation plan for the 1984 program in The Gambia is one of the longer entries; also included is a report on a Happy Baby Lottery held in that country. A comparison is made between quantitative and qualitative research methods, and recommendations are given on the selection and use of these techniques in future field settings.

**100** **PN–AAU–373**
**MF $1.08/PC $7.41**

### Child survival : a report to Congress on the A.I.D. program

U.S. Agency for International Development
Dec 1985, 52p. : En

Fiscal Year 1985 activities of A.I.D.'s Child Survival Action Program (CSAP) are described in this report to the U.S. Congress. Efforts focused on oral rehydration therapy (ORT), intensified immunization efforts, and nutrition–related activities such as the promotion of breastfeeding and Vitamin A therapy. Related program elements included child spacing, research on acute respiratory infections, vector control, and improved water and sanitation. The institutional and financial factors that affect the long–term sustainability of these programs are discussed. It is noted that the projects described in the report are illustrative, not exhaustive, of A.I.D.'s child survival efforts. Appendices provide a chronological listing of A.I.D. activities to develop and promote ORT, develop a malaria vaccine, and eradicate Vitamin A deficiency. (Author abstract, modified)

**101** **PN–AAU–378**
**MF $1.08/PC $7.80**

### Health data needs : proceedings of an expert panel discussion, April 8–9, 1985

Lapham, Robert J.; Gibbons, Lillian K.; Briere, Rona
U.S. Agency for International Development. Bureau for Science and Technology. Office of Health
(Meeting on Health Data Needs, 8–9 Apr 1985)
May 1985, v, 35p. + 6 attachments : En
*Work order no.7*
9361406
PDC–1406–I–07–4062–00

Presented are proceedings from an expert panel discussion on health data needs held in Washington, D.C., April 8–9, 1985. Following an overview of the current health data activities of participating organizations (e.g., A.I.D., World Bank, UNICEF), summaries are presented of discussions on: the purposes of health data collection (process vs. impact data, and the data needs of program managers, policymakers, and evaluators); the different types of health data; various methods of data collection; and gaps in current activities. Issues focused on: health information systems; setting priorities in data collection and analysis; in–country capacity building and training; interorganizational coordination; data quality, cost–effectiveness, and replicability (scaling–up); and the roles of control groups, microcomputers, and operations research. The panel developed recommendations for A.I.D. on the amounts and types of health data needed, the use of existing mechanisms, data analysis and use, research needs (including causes of infant/child mortality, and effects of Vitamin A therapy), and research coordination.

**102** **PN–AAP–634**
**MF $1.08/PC $11.18**

### Human resource development : a selected and annotated bibliography for use in the water supply and sanitation sector

Razak, Vernon
U.S. Agency for International Development. Bureau for Science and Technology. Office of Health
*WASH technical report, no.22,* Feb 1984, ii, 82p. : En
*C–task no. 266*
9311176
AID/DSPE–C–0080

A 62–item annotated bibliography of major, readily available publications dealing with human resource development is presented for use by planners and managers of water supply and sanitation programs. Entries are listed alphabetically and by sectors (water/sanitation, rural development, and generic human resource development) and cover six general areas: planning; utilization; management; training and education; motivation; and organizational development. Information provided for each publication includes a brief review of its contents, comments on format and practical usability, possible applications, subjects covered, cost, and source. Additional human resource development journals, professional publications, and associations are listed in appendices, along with a source list for publishers listed in the bibliography. A final appendix makes recommendations for selecting basic resources from among those listed.

**103** **PN-AAQ-790**

**MF $5.40/PC $55.90**

### Workshop design for spring capping : a training guide

Gormley, Wilma; Goff, David; Johnson, Carl
Camp Dresser and McKee, Inc.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Health
*WASH technical report, no.28*, Sep 1984, v, 352p. + attachments : En
*Order of technical direction no. 154*
9311176
AID/DSPE-C-0080

Information needed to plan and conduct a comprehensive workshop for rural fieldworkers who will assist villagers in organizing, implementing, and maintaining spring capping systems is provided in this training guide. After introductory notes on the workshop methodology and content and preparatory planning, the guide presents 20 training sessions which detail the various steps to be followed in developing a spring capping system, from preplanning and assessment, to construction, maintenance, and evaluation. Emphasis is placed on the use of retaining walls as the type of spring improvement system easiest to construct. Handouts are included for each training session, and a supplement adapting the guide for use with the spring box method of design is appended. The workshop is designed to last about 2 weeks and uses a highly participatory training methodology.

**104** **PN-AAR-216**

**MF $2.16/PC $18.33**

### Operation and maintenance of rural drinking water and latrine programs in Honduras

Donaldson, David
Camp Dresser and McKee, Inc.; U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Honduras; U.S. Agency for International Development. Bureau for Science and Technology. Office of Health
*WASH field report, no.129*, Sep 1984, v, 23p. + 3 appendices : En
*Order of technical direction no. 185*
9311176; 5220166
AID/DSPE-C-0080

To combat high mortality resulting from water-related diseases, A.I.D. has conducted a project to develop safe drinking water and sanitation systems for rural residents of northwest Honduras. This report evaluates the Government of Honduras' (GOH) operation and maintenance (O&M) of these systems.

The report first reviews basic concepts essential to successful rural water system management, including factors that make rural program O&M more difficult (e.g., widespread location, service unreliability, equipment deterioration, recurrent and capital costs, inadequate trained personnel and funding, and high equipment usage); the management of rural O&M efforts and design and construction decisions relating to O&M are also discussed. Next, the existing O&M situation in northwest Honduras is discussed. The report concludes that no plan exists to ensure the long-term O&M of project-installed gravity-fed aqueducts, hand pumps, and latrines. A proposed plan, developed by the consultant in cooperation with the GOH, is presented (in Spanish in the appendix) along with recommendations for its implementation.

The report includes a 12-item bibliography (1973-84) of English and Spanish titles.

**105** **PN-AAS-513**

**MF $1.08/PC $7.93**

### Formulation of national rural water supply policies and strategies in Zaire

Thomson, James T.; Weber, Fred R.
Camp Dresser and McKee, Inc.; U.S. Agency for International Development. Bureau for Africa. Zaire; U.S. Agency for International Development. Bureau for Science and Technology. Office of Health
*WASH field report, no.142*, May 1985, vi, 62p. : chart, map, En, Fr, Request memorandum no.114
9365942
DPE-5942-C-00-4085-00

A team from the Water and Sanitation for Health (WASH) Project was assigned to help Zaire's National Action Committee for Water Supply and Sanitation (CNAEA) formulate a long-term national policy/strategy for rural water supply and sanitation (WS/S) development. This report outlines the methodology and process used by CNAEA in this effort, describes previous WS/S activities in Zaire, and summarizes and makes observations on the initial draft of the CNAEA policy/strategy statement. The WASH team recommends that the Government of Zaire: support the participatory approach already adopted by the National Rural Water Agency (SNHR); fully involve women in WS/S projects; develop the SNHR's capacity to provide training in simple rural water supply techniques; provide institutional autonomy to the proposed SNHR planning unit; specify planning activities; and include sanitation and health components in WS/S activities. Also included are allied recommendations for short-and long-term USAID/Z support to the Zairois WS/S sector.

**106** **PN-AAS-831**

**MF $1.08/PC $3.12**

### Linking water supply and sanitation to oral rehydration therapy in the control of diarrheal diseases

Isely, Raymond B.
Camp Dresser and McKee, Inc.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Health
*WASH technical report, no.31*, Jul 1985, iii, 19p. : charts, En, WASH activity no.142
9365942
DPE-5942-C-00-4085-00

The primary source of pathogens causing diarrhea is fecal contamination of food, water, hands, and objects in the household; mothers, particularly through their role in preparing food, are at the center of this cycle of contamination. A complete program of diarrhea control, therefore, includes not only oral rehydration therapy (ORT) to combat the effects of diarrhea, but water supply and sanitation programs which ensure the safety of water used to mix ORT solutions and which train health workers to educate women in promoting personal, domestic, and food hygiene. Such programs should be introduced before introducing ORT; this will require coordination within the host government health ministry, between the health ministry and the water supply agency, and within A.I.D.'s ORT and water sanitation programs. The planning of such programs must take account of the primary roles of women and peripheral health workers in delivering ORT and sanitation services, the legal responsibilities of country ministries in these areas, and the need for low-cost water supply schemes. Two pages of references (1955-85) in French and English are provided.

*Teaching mothers to prepare oral rehydration solution is a primary means of combatting diarrhea, a major cause of infant mortality in the Third World.*

# POPULATION

**107** **PN-AAS-132**

**MF $2.16/PC $24.57**

### Indonesia contraceptive prevalence survey report 1983 : the results of surveys in five cities

Utomo, Budi; Jatiputra, Sujana; et al.
Indonesia. National Family Planning Coordinating Board; University of Indonesia. Faculty of Public Health; Westinghouse Health Systems, Inc.; U.S. Agency for International Development. Bureau for Asia. Indonesia; U.S. Agency for International Development. Bureau for Science and Technology. Office of Population
Dec 1984, xvi, 172p. : statistical tables, En, In
*Grant no.497-0270*
9320624

Results are presented of the 1983 Indonesian Contraceptive Prevalence Survey (ICPS) of 10,172 currently married women aged 15-49 in five cities - Medan (North Sumatra), Jakarta, Semerang, and Surabaya (Java), and Ujung Pandang (South Sulawesi). Survey questions concerned age, education, occupation, group membership, media use, mean age at first marriage, pregnancy history, interval since last live birth, total marital fertility rate, number of children desired, place and attendants at delivery, and duration of breastfeeding.

Results showed that family planning knowledge was high in all five cities, with the pill, IUD, and injection the most widely known methods. Contraceptive use was positively related to level of education and increased with age (up to the age of 35) and with the number of living children. Target groups for contraceptive services were identified as the 50%-60% of respondents who never used contraceptives and the 65%-70% of past users who did not want additional children. Overall, the proportion of high risk women was estimated at 30%-35%.

Appendices include discussions of breastfeeding practices and of policy issues raised by the survey.

**108** **PN-AAS-315**

**MF $1.08/PC $2.73**

### Technical assistance training in family planning for Senegalese midwives

Evison, Laura
International Science and Technology Institute, Inc.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Population
Sep 1984, iv, 11p. + 2 appendices : En, Report no.84-04-003
9363024
DPE-3024-C-00-4063-00

A.I.D. is proposing a project to expand the current Senegalese Family Health Project by strengthening the role of midwives in the delivery of comprehensive maternal and child health care, including family planning, at public and private clinics. This paper reports on an in-country assessment of the technical assistance and training needs of the Senegalese National Association of Midwives (ANSFS), which will implement the proposed project.

Major findings are that: the demand for family planning has been increased by the Family Health Project, but midwives are not trained to deliver these services; the ANSFS provides little or no support to midwife activities because of budgetary and institutional constraints; and private clinics have few resources to devote to family planning. Key recommendations are to establish a national headquarters for the ANSFS; establish a comprehensive family planning clinical training program for midwives, both pre-service through the national midwifery school and in-service at the proposed ANSFS headquarters; and fund supplies and equipment for maternal and child health care and family planning services at private clinics.

**109** **PN-AAT-296**

**MF $1.08/PC $3.51**

### Transfer of contraceptive production technology to developing countries

Free, Michael J.; Mahoney, Richard T.; Perkin, Gordon W.
Program for the Introduction and Adaptation of Contraceptive Technology; U.S. Agency for International Development. Bureau for Food for Peace and Voluntary Assistance. Office of Private and Voluntary Cooperation
(International Symposium on Research on the Regulation of Human Fertility, Stockholm, SE, Feb 1983)
*PIACT papers, no.9*, 1984, p.189-212 : chart, En
9380242
PDC-0242-G-SS-3111-00

The feasibility of transferring technology aimed at promoting local production of contraceptives in developing countries is discussed in this paper, prepared by staff of the Program for the Introduction and Adaptation of Contraceptive Technology (PIACT) for an international symposium on family planning held in February 1983 in Stockholm, Sweden.

Introductory sections present arguments for and against the local production option and describe the status of contraceptive production technology in 19 developing countries, as well as the cost involved in local production. Discussion of whether donors should promote local production covers the uncertainties involved in assessing developing country industrial projects, as well as key implementation factors that need to be considered (the role of the private sector, the level of production to be supported, and problems involved in producing specific contraceptives). Finally, a number of strategies are identified whereby both donors and developing countries may ease the transition from donor-dependent to self-supporting contraceptive production systems. These include, inter alia, donor efforts to establish clear policies on phasing in local production and developing country efforts to improve the investment climate and to establish national drug and device regulatory authorities.

**110** **PN-AAT-311**

**MF $1.08/PC $4.94**

### Population policy : a manual for policymakers and planners

Isaacs, Stephen L.; Cairns, Gail S.; Heckel, Nancy I.
Columbia University. Center for Population and Family Health. Development Law and Policy Program; U.S. Agency for International Development. Bureau for Science and Technology. Office of Population
1985, 35p. : En
*French ed.: PN-AAV-040*
9320643
DPE-0643-C-00-3063-00

BEST COPY AVAILABLE

Based on the wide experience gained since the first national population policy was issued in 1952, this manual analyzes the substance of written population policies from 20 countries to provide a framework for policymakers. Common elements of population policies – rationale, objectives and goals, demographic targets, policy and program measures, and implementation and institutional arrangements – are discussed and illustrated with excerpts from actual policy statements. Specific attention is given to policies and programs regarding fertility regulation and family planning services; population, family life, and sex education; women's status; health and nutrition; incentives and disincentives for influencing fertility behavior; research and evaluation; legal reforms; and migration. In addition to this content analysis, the process of developing a population policy (which tends to be a politically delicate issue) is also addressed.

**111** **PN–AAU–015**

**MF $1.08/PC $5.33**

### Public expenditure impact : education and health, Indonesian family planning

Chao, Dennis N.W.; Ross, John A.; Piet, David L.
U.S. Agency for International Development. Bureau for Asia and Near East. Indonesia
Sep 1985, iii, 37p. : charts, statistical tables, En

The potential impact of Indonesia's widely hailed family planning program on public expenditures for health and education is analyzed in this paper. Analysis was both retrospective and prospective, covering the period 1971–2001, and was made using two projections, one recognizing the potential effect of the program, the other assuming that there is no program in place. It was found that the program would avert 73.7 million births over 30 years, and thus would reduce health expenditures by Rp. 337 billion in the year 2001 alone and result in cumulative savings of Rp. one trillion in education expenditures. The total effect of the family planning program on government expenditures for health and education is to lower spending by 9% in 1981, 38% in 1991, and 41% in 2001. Although program costs exceed savings in the early years, net savings become positive in 1979 and continue to increase rapidly. Even projecting a more limited family planning program, the internal rate of return would be very significant (31%).

**112** **PN–AAU–430**

**MF $2.16/PC $15.34**

### Population growth and economic development : policy questions

National Academy of Sciences. National Research Council. Commission on Behavioral and Social Sciences and Education. Committee on Population and Demography; U.S. Agency for International Development. Bureau for Science and Technology. Office of Population
1986, ix, 108p. : En
9320643
DPE–0643–G–SS–3068–00

Slower population growth would benefit economic development in most developing countries, according to this study, which assumes a policy-driven fertility decline and measures the population–economic relationship using mainly per capita indicators of economic welfare. Individual chapters discuss whether slower population growth will: (1) increase income growth by increasing the availability of exhaustible and renewable resources; (2) alleviate pollution and environmental degradation; (3) increase output and consumption by raising capital per worker; (4) increase levels of schooling and health; (5) decrease inequality in income distribution; (6) help absorb workers into the modern economic sector and alleviate problems of urban growth; (7) lower income via reduced technological innovation and economies of scale in production and infrastructure. Also discussed are whether a couple's fertility behavior imposes costs on society at large. A final section synthesizes the main findings of the preceding analyses, discusses the importance of environmental and institutional contexts in slowing population growth, and outlines implications for family planning policy. Ten pages of references (1954–85) are provided.

# HUMAN SETTLEMENTS

**113** **PN-AAS-129**

**MF $2.16/PC $24.83**

### Organizing and managing integrated rural development : lessons from field experience

Honadle, George; VanSant, Jerry
Development Alternatives, Inc.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural and Institutional Development
Dec 1984, xii, 174p. + 2 appendices : charts, tables, En
*Also published by Kumarian Press under title: Implementation for sustainability : lessons from integrated rural development*
9365300

Field work was undertaken during 1978–84 to improve the implementation of 24 integrated rural development (IRD) projects in Africa, Asia, Latin America, and the Caribbean through the application of development administration and organizational development skills. This study is based on the field reports, working papers, and published articles generated from this experience.

After a discussion of the linkages between project implementation and benefit sustainability, the roles of organizational structure, management behavior, and technical assistance in delivering IRD goods and services are described. Methods for enhancing local IRD efforts are outlined, such as conducting beneficiary studies, strengthening local institutions, supporting participatory approaches, and encouraging beneficiary action. Constraints on sustainability (financial, organizational, policy-related) and strategies for achieving sustainability (institutional, organizational, technological) are next described. A final section reviews project pitfalls, promising avenues for successful IRD project implementation, and lessons learned from field experience. References follow each chapter.

**114** **PN-AAS-457**

**MF $1.08/PC $5.98**

### Urban - rural dimension in national economic development

Bendick, Marc, Jr.; Egan, Mary Lou
Urban Institute; U.S. Agency for International Development. Bureau for Private Enterprise. Office of Housing and Urban Programs
Jun 1984, 44p. : En
*Bibliography: p.40–44*

Does Africa's rapid urbanization rate present a development challenge or a development opportunity? This paper answers the question by viewing cities as engines for economic growth and by stressing the complementarity of urban and rural development. The economic advantages offered by cities and their role in facilitating rural growth are described; concerns about urban bias, city size, regional dualism, and rural outmigration are addressed. Six rules for creating policies to situate economic activity in the right place along the urban-rural spectrum are given: be guided by local circumstances, not theoretical models; promote better management of major urban areas; avoid direct controls on migration and location; understand the reluctance of industry to locate outside core regions, develop secondary cities with an eye to economic efficiency; and be cautious about new town developments. A 5-page bibliography is appended.

**115** **PN-AAU-425**

**MF $2.16/PC $14.82**

### Economic analysis of AID's housing guaranty program

Buckley, Robert M.; Struyk, Raymond J.
Urban Institute; U.S. Agency for International Development. Bureau for Private Enterprise. Office of Housing and Urban Programs
Feb 1985, xvi, 82p. + 3 appendices : En

Under A.I.D.'s Housing Guaranty Program, the U.S. government provides a full guaranty against default on loans made by private U.S. investors to host countries for investment in their housing sectors. The program, which is designed to support itself from fees charged to the host country as part of the loan terms, was changed significantly in 1970 by adding a host country guaranty of repayment to the requirements for a loan. This report presents an economic analysis of the Housing Guaranty Program from four perspectives: (1) the program's relation to U.S. credit markets, and in particular to the standards established in the Office of Management and Budget's Circular A-70 on Federal credit policy; (2) the program's effects on the host country, especially at the macro-economic level; (3) the program's relation to developing country urban housing problems; and (4) the use of the Housing Guaranty mechanism as a foreign assistance tool. (Author abstract, modified)

**116** **PN-AAU-429**

**MF $2.16/PC $14.43**

### Housing finance strategies for LDC's : developing a systematic approach

Struyk, Raymond; Buckley, Robert; Turner, Margery Austin
Urban Institute; U.S. Agency for International Development. Bureau for Private Enterprise. Office of Housing and Urban Programs
Aug 1985, vi, 101p. + attachment : En

A new A.I.D. Housing Finance Strategy Methodology, designed to identify cost-effective ways of mobilizing and deploying the resources needed to provide minimal adequate housing for all households in a given developing country, is presented. After providing an overview of the new methodology and illustrating its potential use in Sri Lanka, the report discusses the possibilities for mobilizing the funds needed to execute a long-term housing improvement program for a given country and possibly to improve the efficiency of its financial markets. A final chapter discusses how to analyze alternatives for deploying these resources and presents the computer-assisted Housing Quality Model, which simulates the effects of financing on the quality of housing occupied by various income and tenure groups, as a tool in this analysis. Included are 15 tables and 3 pages of references (1981–85).

# ENVIRONMENT & NATURAL RESOURCES

**117** **PN–AAR–219**

**MF $1.08/PC $8.97**

### El Salvador : a country profile

Kochman, Jane
Evaluation Technologies, Inc.; U.S. Agency for International
Development. Office of U.S. Foreign Disaster Assistance
Oct 1984, iv, 62p. : En
AID/SOD/PDC–C–3345

The overview of El Salvador presented herein is one of a series of country profiles designed to provide baseline data for the Office of Foreign Disaster Assistance.

The document first provides brief descriptions of the country's general geographic, demographic, political, economic, agricultural, cultural, and infrastructural characteristics. A second section discusses El Salvador's vulnerability to various environmental (including climatic, seismic, volcanic, agricultural) and civil forms of disaster; information on the country's disaster history and recent, conflict–related (since 1/80) displaced persons problem is included. Finally, El Salvador's disaster preparedness and assistance arrangements are described, with reference to disaster organizations, early warning systems, health resources, food storage and distribution, housing facilities, ground transportation, ports, airports, and energy resources. A.I.D.'s and other donors' disaster relief plans and programs are briefly mentioned.

The text includes two maps; appended are additional data on the displaced population and on average rainfall and a 34–item bibliography (1971–84; one item in Spanish).

**118** **PN–AAR–220**

**MF $2.16/PC $23.27**

### Drought situation report : Niger

Jepson, Lance; Vigil, Rudy; et al.
U.S. Agency for International Development. Bureau for Africa.
Niger
Oct 1984, v.p. : En

The severity of the 1984 drought in Niger and its effects on population migration and food production are assessed in this report. The first sections discuss the effect of the drought on Niger's agriculture and pasture and, with maps for illustration, detail the condition and movement of displaced populations in the various departments. A climatic assessment reveals that throughout half the agricultural zone, and nearly all of the pastoral zone, rainfall was only 50% of normal, creating a far worse situation than during the severe 1973 drought. Estimates for 1984 millet and sorghum production outputs are presented and discussed in relation to food supply and demand. The existing transportation and logistical network is described. Final sections depict the organizational structure of USAID/N and Government of Niger drought relief efforts, the extent of food commitments from other donors, and the strategies developed by the Government of Niger and A.I.D. to combat the crisis. It is concluded that a massive southward migration of herders and sedentary farmers has taken place and that herd losses have reached as high as 60–65% for cattle; the Government of Niger's capacity to deal with the crisis is rapidly being exhausted. It is recommended that A.I.D. provide timely, well–coordinated, and significant emergency assistance. The text includes numerous maps, charts, and tables; seven annexes are appended.

**119** **PN–AAS–512**

**MF $1.08/PC $11.70**

### Ghana : a country profile

Mango, Cecily L.; Davis, Cynthia
Evaluation Technologies, Inc.; U.S. Agency for International
Development. Office of U.S. Foreign Disaster Assistance
Rev. ed. May 1985, vi, 88p. : maps, En
AID/SOD/PDC–C–3345

A country profile of Ghana, prepared for the USAID Office of Foreign Disaster Assistance (OFDA) to support its planning and relief operations, is presented. After briefly describing Ghanaian geography, population, history, government, education, health, and economy, the report assesses Ghana's disaster vulnerability by examining the history of and potential for further damage from climatic disasters (drought, floods, and storms), food and water shortages, bush fires, endemic diseases, and epidemics. Disaster preparedness is described in terms of the capacity of national disaster organizations (National Mobilization Committee, Ghana Red Cross, local PVOs), early warning systems (meteorology, crop forecasting, nutrition surveillance), food storage and distribution, health sector resources (public and private), water and sanitation, housing, energy, and transportation. U.S. disaster relief to Ghana (1964–84) and foreign assistance for preparedness activities and development programs are also reviewed. A case report of the 1984 food shortage and lessons learned from the USAID relief operation are appended.

**120** *** PN–AAT–075**

**MF $2.16/PC $14.43**

### Renewable resource trends in East Africa

Clark University. International Development Program; U.S.
Dept. of the Interior. National Park Service; U.S. Agency
for International Development. Bureau for Science and
Technology. Office of Forestry, Environment and Natural
Resources
1984, x, 104p. : charts, maps, statistical tables, En
*Contract no.CX–0001–2–0030*
9311209
** Program for International Development, Clark University, Worcester, MA 01610 USA, $10.00 each*

Expanding human and livestock population density, coupled with high urban growth rates, are pushing land and water capacities in East Africa to the breaking point. Woodland cover, grazing land, and arable soils are being lost, and dwindling food production leaves the region vulnerable to drought in the event of rainfall shortages. Surface water in lakes, rivers, and coastal areas is being increasingly polluted by untreated industrial and domestic waste. Although progress is being made in controlling resource degradation, swifter action is needed to keep pace with the revolutionary demographic and resource trends which, if unchecked, bode ill for the 110 million people who will be living in East Africa by the year 2000.

Policy recommendations are to improve and maintain the productivity of the area's natural resource base, identify key resource conflicts, include a resource management perspective in the development planning process, upgrade sources of resource information, and initiate new forms of government and private sector institutional development to cope with emerging resource problems. Specific recommendations to implement these policies are also made. Included are 31 figures, 20 tables, 12 pages of references (1940–84), and a list of sources for related visual materials.

**121** **PN-AAT-190**
**MF $3.24/PC $36.27**

### El Salvador : perfil ambiental; estudio de campo (El Salvador : environmental profile; field study)

Moran, Joaquin Alonso Guevara; Daugherty, Howard; et al.
EMTECSA de C.V.; U.S. Agency for International Development. Bureau for Latin America and the Caribbean. El Salvador
Apr 1985, 266p. : ill., maps, statistical tables, Es
5190167
519-0167-C-00-2039-00

An interdisciplinary study of El Salvador's natural resources – their quantity, quality, location, use, state of degradation, capacity for regeneration, and problems related to management – is the basis of this five-part environmental profile.

In the first part, the endowment, distribution, and exploitation of natural resources are described, including climate, hydrography, and soil, forest, coastal, marine, mineral, and energy resources. The second part discusses ecodevelopment in relation to El Salvador's economic, social, and cultural characteristics (including land use, demography, education, health) and their impact on the environment. Next, the institutional, legal, and political aspects of environmental issues and natural resource conservation efforts are analyzed, highlighting: the need for social action; the role of government planning, programs, and projects; and the limitations of such actions. In the final part, 13 recommendations are made for overcoming ecological degradation, including suggestions to increase public awareness; strengthen the roles of environmental scientists, nongovernmental organizations, and the national park system; and promote higher education in environmental sciences. Appended are an 894-item bibliography (1854–1984) and lists of endangered species.

**122** **PN-AAT-196**
**MF $1.08/PC $10.14**

### Niger : a country profile

Rubino, Mary M.
Evaluation Technologies, Inc.; U.S. Agency for International Development. Office of U.S. Foreign Disaster Assistance
Apr 1985, iv, 61p. + attachment : ill., charts, maps, statistical tables, En
AID/SOD/PDC-C-3345

Baseline data to support the planning and analysis of relief operations of A.I.D.'s Office of Foreign Disaster Assistance are presented in this country profile of Niger. After briefly summarizing general information on the country, the report provides an overview of Niger's physical environment, three-fourths of which is desert and which shows a landscape ravaged by drought and harmful agricultural practices. Population pressures have created shortages in housing, medical care, food, energy, and other basic needs, as well as related problems such as an increase in fires and in epidemic disease. A review of Niger's disaster preparedness includes a description of the national cereals marketing organization (OPVN) and its nationwide network of warehouses and distribution centers, as well as overviews of health, sanitation, and transportation infrastructure. USAID/N's disaster plan and resources are briefly described, and a listing of international disaster relief organizations is presented. Appendices include a report on a drought currently afflicting the country.

**123** **PN-AAT-230**
**MF $5.40/PC $51.74**

### Perfil ambiental de la República de Guatemala (Environmental profile of Guatemala)

Garcia, Luis E.; Lemmerhofer, Carlos; et al.
Rafael Landivar University. Institute of Environmental Sciences and Agricultural Technology; U.S. Agency for International Development. Bureau for Latin America and the Caribbean. Regional Office for Central American Programs
Nov 1984, 3v. : Es
*Executive summary: PN-AAT-229 (in English)*
5960000
596-0000-C-00-3060-00

This environmental profile addresses the present state and use of Guatemala's natural resources, the legal and administrative infrastructure that support such use, and the resources available for proper environmental management. Following a detailed description of Guatemala's physical, biological, and human/cultural resources, patterns in resource use and environmental protection are discussed, with reference to the social and economic factors that influence those trends. Presented next is a detailed account of the main environmental problems facing Guatemala today, which include deforestation and contamination of air, water, and food. Based on the above descriptions, the potential for irreversible loss of resources and of development opportunities is addressed. A critical diagnosis of the situation identifies and prioritizes groups of problems, and recommendations for an environmental rehabilitation and protection strategy are made for the near, middle, and long term. Appendices provide the study's background, methodology, terms of reference, principal limitations, and a 169-item bibliography (1932–83).

**124** **PN-AAT-658**
**MF $1.08/PC $5.46**

### Integrated watershed management research for developing countries : workshop report

Easter, K. William; Hufschmidt, Maynard M.; McCauley, David S.
East – West Center. East – West Environment and Policy Institute; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
(Integrated Watershed Management Workshop, Honolulu, HI, US, 7–11 Jan 1985)
Sep 1985, iv, 38p. : En
9364127
DAN-4127-G-SS-5021-00

A watershed management (WM) approach to regional resource management in Asia is useful for examining upstream activities and their biophysical and social consequences. Presented herein is a report on a workshop held in January 1985 to identify WM research needs and methods. The workshop identified 24 important needs in the following areas: (1) information systems and flexible planning models; (2) quantification and valuation of upstream/downstream relationships; (3) participation in WM; (4) using past experience to improve WM, and (5) organizational, institutional, and policy concerns. A discussion of research approaches concluded that research should reveal not only biophysical relationships, but economic, social, cultural, political, and institutional aspects as well; several appropriate methods are outlined. Included are a conceptual framework for identifying WM problems and synopses of 16 workshop papers.

**125** **PN-AAU-219**
**MF $2.16/PC $17.16**

### Coastal resources management and environmental assessment needs for aquatic resources development in Indonesia

Burbridge, Peter W.; Maragos, James E.
International Institute for Environment and Development; U.S. Agency for International Development. Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources
Jul 1985, 116p. : charts, maps, En, Report no.EPM 33
9365517
DAN-5517-A-00-2066

Due to the interdependence of Indonesia's coastal and aquatic ecosystems, aquatic resources development (ARD) and coastal resources management (CRM) activities must address the environmental, socioeconomic, resource, and political factors related to sustained development. This three-part study: (1) assesses the status of Indonesia's important ecosystems (agroecosystems, freshwater ecosystems, beaches, estuaries, tidal swamp forests, mangroves, seagrass beds, coral reefs, and pelagic and demersal ecosystems), outlining Indonesia's future demand for coastal resources and major coastal resource development and management problems; (2) presents the need for CRM as well as the governmental context and a strategic framework for developing a CRM initiative; and (3) offers recommendations for improving Indonesia's environmental assessment procedures and for including CRM within ARD projects. Included are 6 pages of references (1869-1985), 7 figures and 8 tables, and a preliminary environmental assessment with suggested locations for ARD projects.

**126** **PN-AAP-935**
**MF $2.16/PC $16.77**

### Innovations in tropical reforestation : casuarinas, nitrogen - fixing trees for adverse sites

National Academy of Sciences. National Research Council. Office of International Affairs. Board on Science and Technology for International Development
Apr 1984, vii, 118p. : En
9365538
DAN-5538-G-SS-1023-00

Casuarinas are robust, nitrogen-fixing trees that can be planted on harsh, eroding land to provide fuel and other wood products. This book describes 18 species of Australasian casuarina that could have potential in reforesting difficult terrain in many parts of the world, highlighting species for tropical lowlands and highlands, temperate zones, and semiarid regions. The management and uses of the different species are discussed, and recommendations and research needs (for genetic resources, worldwide plantation trials, and silvicultural, microbiological, utilization, and other species research) are given. This study was done in cooperation with the Commonwealth Scientific and Industrial Research Organization (CSIRO) of Australia, which convened a meeting of casuarina experts in Canberra in August 1981; discussions from that conference were used in the preparation of this report, which contains numerous photographs, a 63-item annotated bibliography of casuarina readings (1891-1981) in French and English, and a list of 101 research contacts in 28 countries. (Author abstract, modified).

**127** **PN-AAQ-227**
**MF $2.16/PC $24.18**

### Agroforestry in developing countries : selected policy issues

Shapiro, Kenneth H.; West, Patrick; et al
University of Michigan. Center for Research on Economic Development; U.S. Agency for International Development. Bureau for Program and Policy Coordination. Office of Policy Development and Program Review
May 1984, 195p. : En
OTR-0091-C-00-2164-00

Four studies on agroforestry in developing countries are presented. Study I discusses policy issues such as the role of subsidies, farmer-government relations, and agroforestry research; a systems approach is urged and the difficulty - due to a focus on biological aspects - noted of drawing general scientific, economic, or socioeconomic lessons. Study II summarizes available knowledge about key sociological factors, barriers, and strategies in agroforestry programs and concludes by discussing the need for a participatory and pluralistic approach. Study III, on the microeconomics of agroforestry, covers the supply and demand for forest products and services, the results of specific agroforestry project cost-benefit studies, and use of techniques such as shadow pricing to include nonpriced values in project appraisal. Study IV presents tables of agroforestry project data on timber, firewood, crop, and fodder production, and on farmer income, soil improvement, and environmental protection, along with a series of abstracts of individual projects. Included is a 17-page bibliography, mostly dating from the 1977-1982 period.

**128** **PN-AAS-206**
**MF $1.08/PC $9.62**

### Private enterprise initiatives for international forestry development : proceedings of a workshop and commissioned papers

Laarman, Jan G.; Dutrow, George F.
U.S. Dept. of Agriculture. Forest Service; U.S. Agency for International Development. Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources
(Workshop on Private Enterprise Initiatives for International Forestry Development, Raleigh, NC, US, Nov 1982)
Jul 1984, viii, 66p. : En, GTR-WO-40
9365519

# ENVIRONMENT & NATURAL RESOURCES

Presented herein are seven papers from a November 1982 workshop, organized by the Southeastern Center for Forest Economics Research (SCFER), which address A.I.D. efforts to encourage private enterprise initiatives for forestry development. The papers, presented by participants from business, government, and academia, cover A.I.D.'s strategies and goals in promoting private enterprise, the role of U.S. technical assistance in forestry development, and the importance of coordination between forestry businesses in the U.S. and recipient country. Specific themes suggested for A.I.D. projects include stimulating forest product exports; promoting management training for forestry industry personnel; organizing foreign joint ventures in forest product businesses; and facilitating technology transfer. Also provided are five papers commissioned by SCFER which discuss ways to overcome barriers to expanded private enterprise in the forestry sector, methods for assessing both country suitability for forestry projects and potential for wood exports to the U.S., and financial incentive programs in Latin America.

**129** **PN-AAS-279**

**MF $1.08/PC $4.16**

### Assessment of the U.S. Agency for International Development forestry program : needs and opportunities; final report

Borlaug, Norman E.; Butterfield, Samuel H.; et al.
U.S. Agency for International Development. Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources
25 Jan 1985, 32p. : En

A 1984 assessment of A.I.D.'s forestry program reached five major conclusions concerning the role of international assistance in increasing forestry's contribution to development: (1) forestry integrated with agriculture and village industry is key to sustainable economic and social development; (2) research is essential to enhancing forestry's contribution to agriculture and rural development; (3) transferring already known technology and adapting and implementing it are critical to the success of technical assistance in forestry; (4) a substantial strengthening of U.S. professional capability will be required to achieve the expansion and intensification of forestry support recommended in this report; and (5) the effectiveness of the overall design and implementation of forestry programs can be increased through better coordination and cooperation among donor agencies. Following a short narrative overview of A.I.D.'s forestry commitment, specific approaches for translating the foregoing conclusions into action are detailed.

**130** **PN-AAT-387**

**MF $2.16/PC $19.50**

### Trees and tenure : an annotated bibliography for agroforesters and others

Brick, Steve; Bruce, John; et al.
University of Wisconsin, Madison. Land Tenure Center; International Council for Research in Agroforestry; U.S. Agency for International Development. Bureau for Science and Technology. Office of Rural Development and Development Administration
Jan 1985, xvii, 135p. : En

Not all cultures share the Western presumption that a tree belongs to the owner of the land on which it stands. Rules of land and tree tenure vary widely, especially in developing countries. Prepared especially for persons planning agroforestry projects, this annotated bibliography presents more than 400 references, most dating from 1970–84, on land and tree tenure.

Following an introduction which summarizes the dimensions of the land tenure/trees problem and its significance to the design of agroforestry projects, the references are arranged in a general section, and then in sections covering Africa, Asia, Latin America, and Oceania. Appended are citations for major works on land tenure and agrarian reform which do not, however, directly address the relationship between tenure and trees (organized as above), and indexes by subject, country, and tree species.

**131** **PN-AAT-972**

**MF $2.16/PC $18.59**

### Tropical forests : a call for action

World Resources Institute
Oct 1985, 3v. : ill., charts, maps, statistical tables, En
*Pt.1: the plan; pt.2: case studies; pt.3: country investment profiles*

The World Resources Institute (WRI), in cooperation with multi-and bilateral organizations, has launched a major initiative to conserve forests in the humid and semiarid/arid areas of developing countries. This 3-part WRI report is a call to political action on this subject. Part I describes the high costs exacted by deforestation, but asserts that the process can be arrested and reversed by a partnership of governments, local participants, and development assistance agencies. Proposals are presented for a 5-year action plan in farm, community, and arid zone forestry; conservation and improved use of fuelwood; land use on high, medium, and low rainfall watersheds; forest management for industrial uses; conservation of tropical forest ecosystems; and strengthening institutions for research, training, and extension. Examples of successful projects in these areas and a summary of total investment needs are included. Parts II and III present, respectively, fuller case studies of the successful projects listed in Part I and 5-year investment profiles of 56 developing countries affected by deforestation.

**132** **PN-AAU-231**

**MF $1.08/PC $3.77**

### Effects of forest land use on erosion and slope stability

O'Loughlin, Colin L.
East - West Center. East - West Environment and Policy Institute
(Seminar on the Effects of Forest Land Use on Erosion and Slope Stability, Honolulu, HI, US, 7-11 May 1984)
May 1985, iii, 26p. : En

Abstracts of research papers and a summary of proceedings are presented of a seminar jointly sponsored by the East-West Environment and Policy Institute, the International Union of Forest Research Organizations (IUFRO), and the Forest Services of the United States and of New Zealand. The seminar, held May 1984 at the East-West Center in Hawaii, represents IUFRO's first attempt to examine societal as well as physical and biological factors affecting erosion and slope stability in forest steeplands. Three main topics were addressed: (1) societal factors (6 papers), including population pressures, road construction, and settlement expansion in rural areas, farmers' failure to adopt needed controls, and expansion of large-scale and forest-based industries; (2) physical and biological factors (15 papers), such as climate, soil composition, vegetation, and human-and animal-related destruction; and (3) management for the prevention and control of slope stability problems (13 papers), including reforestation, alternative methods for logging and road construction, and other methods for slope protection. A list of the 66 participants from 16 countries is given.

*A.I.D. has set aside millions of dollars to fight what could be Africa's worst plague of locusts in over 50 years.*

# ENERGY

**133** **PN-AAP-567**

**MF $1.08/PC $4.81**

### Catalogue of rural electric utility and small hydropower training programs

National Rural Electric Cooperative Association; U.S. Agency for International Development. Bureau for Science and Technology. Office of Energy
1984, 32p. : En
9365715
AID/DSAN-CA-0226

Rural electric utility and small hydropower training programs offered by the National Rural Electric Cooperative Association (NRECA) are described in this catalogue.

Described are courses in NRECA's growing, but still small, U.S.-based program and in its extensive overseas program. Included in the latter are courses in basic and advanced management for rural electric utilities, covering management skills, accounting, engineering, construction, technical skills, front-line supervision, and operations and maintanance. Also described are 15 courses in small hydropower technology and specialized courses in wood-pole preservation and maintenance. Overseas courses generally last 3-5 days (although the length of the specialized courses is not specified), while U.S.-based courses last 10 days to 6 weeks. A list of 36 course instructors is provided.

**134** **PN-AAS-442**

**MF $1.08/PC $4.68**

### Innovative approaches to financing energy conservation investments in developing countries

Hagler, Bailly and Co.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Energy
10 Sep 1984, v.p. : statistical tables, En, HBC reference no.RA-158-3
9365728
DAN-5728-C-00-3073-00

Despite its potential economic and social benefits, energy conservation is not prevalent in developing countries because few firms have access to capital to invest in energy conservation measures. This report presents five innovative financing arrangements - (1) shared savings; (2) joint venture arrangement between an energy user and an external investor; (3) energy service agreement; (4) variable payment loan; and (5) limited term, guaranteed payback loan - which are designed to reduce the initial cash outlay needed to undertake a conservation project, shift certain technical/economic risks to an external investor or creditor, relieve the fixed-payment burden associated with traditional debt financing, and transfer tax benefits to an external equity investor. Described for each arrangement is its structure and operation, the distribution of risk between the energy user and the creditors/external investors, and the financial benefits that accrue to the energy user; each is illustrated with an example. A final section discusses the potential public sector role in promoting these financing alternatives.

**135** **PN-AAS-459**

**MF $1.08/PC $6.76**

### Haiti : energy efficiency in the sugar and manufacturing industries

Streicher, Alain
Hagler, Bailly and Co.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Energy
28 Mar 1985, v.p. : statistical tables, En
9365728

A review of energy use in Haiti, aimed at identifying possible projects to complement current A.I.D. support for institution building and energy planning within the Ministry of Mines and Energy Resources (MMRE), is presented. Key findings are that: (1) the sugar and manufacturing industries rely heavily on biomass fuels - wood, charcoal, and bagasse (sugar cane residue); and (2) demand for commercial energy and for electricity is growing rapidly despite supply constraints. The report calls for A.I.D. to: initiate a program to reduce biomass consumption (which is causing severe soil erosion and deforestation), especially in the small distilleries called guildives; collaborate with MMRE and the World Bank to develop a detailed workplan to promote energy efficiency in the guildives, focusing on technology development; help MMRE and the private sector to project Haiti's industrial energy and electricity needs through the year 2000; and sponsor a program of energy audits and efficiency improvements in the manufacturing sector.

**136** **PN-AAS-476**

**MF $1.08/PC $7.67**

### Conclusions and recommendations of the Latin America and Caribbean regional energy conservation seminar (seminario sobre la conservacion de energia)

Hagler, Bailly and Co.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Energy
(Latin American and Caribbean Regional Energy Conservation Seminar, Alajuela, CR, 14-17 Jan 1985)
29 Mar 1985, 30p. + 5 appendices : En, HBC reference no.85-162
9365728
DAN-5728-C-00-3073-00

Strategies for conserving energy in Central and South America are presented. The strategies, which represent the final conclusions and recommendations of a January 1985 seminar held in Costa Rica and attended by 68 participants from the region, fall into seven categories (general, energy auditing, fuel substitution, financing, transport, buildings, and operational) and reflect the participants' consensus that the primary goal of energy conservation - saving on foreign exchange - is in keeping with the development objective of improving the competitiveness of a nation's productive sector. Abstracts for each of the papers presented at the seminar are also provided.

**137** **PN-AAS-987**
**MF $1.08/PC $6.89**

### Africa bureau energy strategy statement

U.S. Agency for International Development. Bureau for Africa
Jan 1985, vii, 25p. + 3 appendices : En

This energy strategy statement of A.I.D.'s Africa Bureau focuses on the use of technical assistance in four major areas: (1) to reorient energy policy and develop institutional and human resources; (2) to reduce the impact of oil imports on foreign exchange earnings (e.g., by developing energy management programs and identifying fuel substitution alternatives); (3) to improve production and use of biomass fuels; and (4) to identify energy-efficient equipment and systems for use in A.I.D. projects to increase agricultural productivity and off-farm employment. Also addressed are various cross-cutting issues such as promotion of new technologies, improvement of information transfer, use of the private sector in energy efforts, and improved coordination of donor energy activities. Specific strategies for increasing energy efficiency/indigenous energy production, increasing biomass supplies and improving natural resource management, and increasing agricultural productivity are appended.

**138** **PN-AAT-159**
**MF $4.32/PC $4.42**

### Final report, transport energy : determinants and policy

Dunkerley, Joy; Hoch, Irving; Bouhdili, Caroline
Resources for the Future, Inc.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Energy
Sep 1985, v.p. : charts, statistical tables, En

Expanding oil consumption by the transportation sector, already a major oil consumer, poses an economic threat to many developing countries. This report presents an overview of past trends in transport energy consumption and analyzes these trends systematically via regression analyses based on data from 80 developing and industrial countries (including new data on total and sectoral fuel consumption, numbers of trucks and buses, GDP, gasoline and diesel prices, and demographic and geographic features). Results of these analyses are supplemented by case studies of India and Ecuador. Results reveal high income and low price elasticities for fuel consumption and suggest that, despite rising fuel prices, increases in fuel consumption and vehicle ownership will outstrip increases in economic activity. This situation will require adapted fuel price policies, which are critical in explaining fuel consumption. However, given the low price elasticities, price policies should be supplemented by improving vehicle efficiency and truck load factors, providing attractive alternative forms of public transportation, and reducing road congestion.

**139** **PN-AAT-512**
**MF $1.08/PC $5.96**

### Policy background paper, incentives for the use of renewable energy : the experience in Brazil, Cyprus, India, the Philippines, and California

Pumfrey, Ross; Hoffmann, Thomas
International Institute for Environment and Development; U.S. Agency for International Development. Bureau for Science and Technology. Office of Energy
1985, 43p. : En
*Related series: Country policy paper*
*1985 International Roundtable on Renewable Energy*

Written for a 1985 international roundtable, this paper summarizes programs in five locales (India, Brazil, the Philippines, Cyprus, and the State of California) to promote the use of renewable energy resources. While the promotion program in California was generic in nature, in the four developing countries they were technology-specific: India's program initially promoted biogas digesters and now includes solar water heaters and improved cooking stoves; Brazil promoted the use of ethanol over gasoline; the Philippines promoted geothermal resources for electric power generation and biomass fuels; and in Cyprus, the private sector developed and promoted solar water heaters with little government intervention. The body of the paper uses these experiences to analyze indepth the conditions that influence the response of energy consumers and producers to renewable energy promotion programs. A final section summarizes key lessons learned – programs that neglect consumers' needs usually backfire, promotion must not race ahead of technology's capacity to deliver consistent performance, granting subsidies may encourage producers to rely on them, and governments must develop overall energy policies – and presents issues for further discussion at the roundtable.

# EDUCATION

**140** **PN-AAL-050**

**MF $1.08/PC $6.50**

### Management education in modern Tunisia : L'Institut Superieur de Gestion, Tunis

Casstevens, Thomas W.; Johnson, Nancy C.; et al.
U.S. Agency for International Development. Bureau for Program and Policy Coordination. Center for Development Information and Evaluation
*AID evaluation special study, no.24,* Apr 1985, viii, 24p. + 6 appendices : statistical tables, En
6640228

With the help of technical assistance and overseas faculty training from A.I.D., the first graduate school of business administration in North Africa, *l'Institut Superieur de Gestion* (ISG), was founded at the University of Tunis (UT) in 1969.

Initially, ISG offered only a 3rd cycle program modeled on the American M.B.A.; at the Government of Tunisia's urging, however, 1st and 2nd cycle (undergraduate) programs were added. ISG's institutional spinoffs are quite impressive. A Faculty of Economics and Management was founded in Sfax; its dean is a former ISG dean. Other ISG faculty have joined the Institute of Advanced Commercial Studies and the Faculty of Law, Politics, and Economics; ISG 3rd cycle graduates are now junior faculty at UT. ISG has fostered upward social mobility – its graduates, most of whom are from low-income families and many of whom are women, have little difficulty finding good jobs. On the other hand, ISG's popularity has created a problem, as other institutions have raided not easily replaceable doctoral faculty. Another problem (recently resolved through policy dialogue) was the reluctance of Tunisian officials to accept the American Ph.D. as the equivalent of the French *Doctorat d'Etat.* Although the goal of 25–40 3rd cycle graduates annually was reduced to 10–12, the addition of 1st and 2nd cycles, which graduate 100 and 150–200 students respectively, has increased the total number of graduates. While A.I.D. may have withdrawn its technical assistance too soon for best results, the project was nevertheless a very successful example of institution building and technology transfer because it was appropriate to Tunisia's needs as a middle-income country with a rapidly growing economy.

The project has taught several commonplace, yet important lessons: (1) a project is more likely to succeed if objectively appropriate and subjectively desired by the host country; (2) institution building is a long-term affair; (3) the renewal of cadres is indispensable in the long run; (4) competing demands for trained personnel tend to disperse that scarce resource; (5) a viable institution adapts to its environment and often diverges from its original plans; and (6) a project's spinoffs may be more significant than the project itself.

**141** **PN-AAQ-883**

**MF $1.08/PC $1.95**

### Teaching English by radio

Imhoof, Maurice
U.S. Agency for International Development. Bureau for Science and Technology. Office of Education
1984, 15p. : En
9311017
AID/DSPE-C-0051

The effectiveness of an A.I.D. pilot project to use radio for teaching language in Kenyan primary schools is assessed in this report.

In its third year, the project broadcasts English-language classes to 31 rural schools for 30 minutes a day, 5 days a week; the radio lessons take the place of traditional English classes in the schools. Achievement tests administered after the first year of radio instruction showed that listening and reading comprehension were 50% and 23% better, respectively, for radio pupils than for those attending conventional classes. Excerpts from lesson scripts included in the report's text illustrate important principles for radio language programming: maximize the use of the subject language; follow a systematic instructional process; create lifelike situations; keep the learner actively involved; and distribute learning over long time periods. The project has shown that radio is an appropriate, relatively cost-effective instructional technology for developing countries, effective for initiating and conducting language practice and for reaching widely scattered and diverse listeners.

**142** **PN-AAS-381**

**MF $1.08/PC $2.34**

### New uses for old technologies

Imhoof, Maurice
Academy for Educational Development, Inc.; U.S. Agency for International Development. Bureau for Science and Technology. Office of Education
(Computer Assisted Language Learning and Instruction Consortium Symposium, 2 Feb 1985)
Feb 1985, 17p. : En
9311017
AID/DSPE-C-0051

Radio as an instructional technology has been used in many situations with varying degrees of success, but evidence regarding the effectiveness of radio in language teaching is largely anecdotal. Radio has obvious advantages in low-income countries with geographically scattered populations. For countries in which a national language policy requires the teaching of a second language on a massive scale, radio can be the most appropriate medium and represents the greatest extent to which technological innovation can be implemented

The Radio Language Arts Project currently nearing completion in Kenya represents one model for the use of radio in language instruction. This five-year research and development effort is systematically assessing the cost and benefits of an intensive use of radio to teach English to lower primary children in rural Kenyan schools. This paper discusses radio's effectiveness in providing quality language instruction to meet the social and educational goals of developing countries and provides some implications for radio's interaction with other technologies. (Author abstract)

**143** **PN-AAS-549**

**MF $1.08/PC $2.73**

### Radio in the classroom : ten years of proven success

U.S. Agency for International Development. Bureau for Science and Technology. Office of Education
1985, 18p. : chart, En

Results of 10 years of applied research sponsored by AID/W's Office of Education (S&T/ED) on the use of radio to increase access to primary education in rural areas are reviewed. After a general introduction to the value of radio as an educational medium, the report summarily describes four S&T/ED projects – Radio Mathematics (Nicaragua), Radio Language Arts (Kenya), Radio Basic Education (Dominican Republic), and the forthcoming Radio Science project (country not specified). A final section discusses lessons S&T/ED has learned from these projects regarding: the potential of educational radio; the successful use of radio in teaching children (the importance of rigorous instructional design and of using radio as a primary means of instruction, the need to involve students actively in the learning process, the value of gathering immediate feedback from the children and of distributing instruction over time, and the importance of engaging children's interest); the educational role of teachers and parents; how radio can eliminate the need for expensive instructional aids; and radio's physical reliability. Since interactive radio can meet developing countries' educational needs in a cost-effective and equitable manner, the challenge, it is concluded, is to incorporate radio lessons into the regular educational systems.

**144** *** PN-AAS-732**

**MF $3.24/PC $26.26**

### Education for agriculture : proceedings of the symposium on education for agriculture

International Rice Research Institute; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
(Symposium on Education for Agriculture, Manila, PH, 12–16 Nov 1984)
1985, vi, 204p. : charts, statistical tables, En
936411102
** IRRI, P.O. Box 933, Manila, Philippines*

Proceedings are presented of a Fall 1984 symposium to assess current needs worldwide for agricultural education. Nineteen symposium papers are included. Ten papers analyze the state of agricultural education at centers of higher education, research stations, and international organizations, as well as the possible role of the private sector. Two papers describe how Indian and Korean farmers view agricultural education, while three others assess the future of agricultural education, women's needs in this area, and the importance of following-up on trainees. The final four papers discuss methods in agricultural education in terms of current issues in agricultural extension, computer usage, dissemination techniques, and language education.

An initial section of the report lists recommendations made at the workshop regarding the role of agricultural universities in research and training, including nondegree training; the role of international agricultural research centers (IARC's) in assisting these universities; and appropriate responses to the specific educational needs of farmers, the private sector, government, and universities. It also outlines the major constraints to human resource development, discusses the potential uses of computers, and proposes specific recommendations for joint training programs between IARC's and universities.

*A U.S.-trained Ecuadorean dairyman helps examine fruit trees on a Partners of the Americas model farm.*

# TECHNOLOGY

**145** **PN-AAL-052**

**MF $2.16/PC $14.17**

## Promoting the manufacture and use of small-scale agricultural machinery in Indonesia

Sinding, Monica K.; Delp, Peter; et al.
U.S. Agency for International Development. Bureau for Program and Policy Coordination. Center for Development Information and Evaluation
*AID evaluation special study, no.26*, Jun 1985, xiii, 58p. + 7 appendices : ill., charts, map, statistical tables, En
4980265

The effectiveness of AID-supported efforts by the Government of Indonesia (GOI) and the International Rice Research Institute (IRRI) to promote indigenous private manufacture of agricultural machinery in target areas is assessed. Although it is too early to draw firm conclusions as to the program's direct socioeconomic benefits, the feasibility of substituting less costly and more easily maintained and repaired Indonesian-made farm machinery for imported machinery has been established.

The technology being transferred under the IRRI-GOI program is easily adopted by small manufacturers because it requires little capital or equipment and relies on skills already present in many rural workshops. While firms varying in size and market orientation have participated in the program, sustained commitment is found only among smaller fabricators directly linked to farmers; IRRI-type equipment now represents an important part of the livelihood of these entrepreneurs.

Program efforts have also successfully turned around GOI policy toward locally manufactured farm equipment; import bans have been imposed and credit made more available to both manufacturers and buyers of small farm equipment.

Indigenous manufacture has already spread spontaneously beyond target areas, and it appears that the program is replicable in other Indonesian provinces, or, with some modifications, in other countries with a suitable policy environment and sufficient sophistication in metal fabrication. Replication with respect to nonagricultural manufacturing, however, is less likely to be successful - only in agricultural manufacturing is fabrication so closely linked to service and so dependent on local adaptation of design. Also, the fact that much of the program's success is due to the enormous dedication and enthusiasm of the IRRI project officer and his Indonesian counterparts creates further doubts about replication on a broader scale.

Lessons learned are: the overall business environment for fabricators must be favorable; developing country commitment to a clearly articulated policy and program for farm mechanization must exist; and coordination among and within the principal involved ministries is essential.

**146** **PN-AAQ-471**

**MF $1.08/PC $11.05**

## Database software selection for the Egyptian national STI network

Slamecka, Vladimir
Georgia Institute of Technology; Egypt. Academy of Scientific Research and Technology. National Information and Documentation Centre; U.S. Agency for International Development. Bureau for Near East. Egypt
Jun 1984, 67p. + 3 appendices : En
2630016
NEB-0016-C-00-2092-00

The evaluation and selection of information/data management software for the Egyptian National Scientific and Technical (STI) Network is herein reported. The network consists of sectorally oriented information services nodes (ISN's), each having a responsibility for the development and maintenance of public databases of Egyptian information and data.

The report elaborates on the differences between information retrieval and database management (DBMS) systems, concluding that while the Egyptian databases are likely to contain both unstructured text and structured numeric data, the former are likely to receive initial emphasis. From this premise, the report lists the mandatory and desirable specifications of the database software.

The evaluation methodology consisted of an extensive, 2-year survey of available commercial software and comparison with the mandatory specifications. Software options reviewed were, in order of preference: (1) a universal DBMS capable of handling both text and data types; (2) a relational DBMS expandable to handling full-text retrieval; and (3) an information retrieval software system. After studying nearly 100 software packages, it was concluded that no universal or relational DBMS on the market meets the constraints and demands of Egypt's National STI Network.

The recommended software is the recently introduced mini/micro version of BRS/SEARCH, a full-text information management software package from BRS, Inc. The GSA software evaluation form and other documentation regarding the recommended package are included in the report.

Included are 5 charts, 7 tables, and 104 references (1969-1984) in English, Russian, and German. (Author abstract, modified)

**147** **PN-AAS-443**

**MF $1.08/PC $10.27**

## High impact appropriate technology case studies

Fricke, Thomas
Appropriate Technology International
1984, 76p. : ill., En

Eight case studies of successful applications of appropriate technology are presented to demonstrate that small, low-cost, sustainable solutions benefiting large numbers of people are possible. Specifically, the technology applications discussed are: Mark II handpumps, bamboo tube wells, and women's pappad processing cooperative enterprises in India; oral rehydration therapy, worldwide; water pumping windmill industry in Argentina; bamboo-reinforced concrete rainwater storage tanks in Thailand; labor-intensive rural access road building in Kenya; and rural small farm implements components manufacture in Tanzania. Included in most case studies are descriptions of: the technology used; the magnitude of impact; the dissemination/funding scheme used; economic, environmental, and social/cultural considerations; user participation and understanding; and reasons for success. References are provided at the end of each case study, several of which are illustrated.

**148** **PN-AAS-452**
**MF $1.08/PC $10.40**

### System for the monitoring and evaluation of appropriate technology projects

Hyman, Eric L.; Corl, Thomas C.
Appropriate Technology International
20 Feb 1985, 41p. + 3 appendices : En

Careful monitoring and evaluation are crucial in projects that introduce innovative or adapted appropriate technologies. This paper explains the nature and use of Appropriate Technology International's (ATI) Project Monitoring and Evaluation System (PMES). First presented is a general discussion of monitoring and evaluation – their definitions, objectives, and relationship to the project planning and implementation process. Discussion is then given to the PMES, an 18 page checklist covering ten areas: (1) technology; (2) institutional capacity; (3) project activities; (4) credit and equity financing; (5) inputs; (6) outputs; (7) markets; (8) commercial and economic viability; (9) impacts; and (10) policy issues and replication. A completed PMES form for a hypothetical project and a blank form for reproduction purposes are attached. Also included are brief sections on supplementary data requirements and on financial and progress reports.

**149** **PN-AAS-740**
**MF $1.08/PC $4.81**

### Understanding stabilized earth construction

Bush, Alfred
Volunteers in Technical Assistance, Inc.
*VITA technical paper, no.2,* May 1984, 35p. : ill., plans, statistical tables, En

Stabilizing soil through various additives can increase the technological possibilities of soil for use in commercial or home construction. This report discusses the classification, testing, mixing, and use of stabilized soils.

As an aid in determining whether soil is suitable for stabilization and construction, the report presents two schemata – one for classifying the higher categories of soils (order, suborder, and great soil groups), and a second for estimating percentages of sand, silt, and clay in a given soil. It also describes methods of testing the suitability of soils for stabilization (the liquid limit, moisture-density, wet strength tests). Described next are various mixes of stabilized soils (soil-cement, plastic soil-cement, and cement-modified mixes). The report also illustrates graphically the equipment needed for high-and low-technology applications of soil (for road and low-cost housing construction, respectively) and describes methods for testing soil mixes (optimum moisture, tests for cement-soil mixes, particle determination tests, compaction tests). The curing process is briefly described.

Brief final sections note the conclusions reached at a September 1981 workshop regarding future research needs and list questions to be answered in deciding whether or not to use cement stabilized soils in a given case. Appended are a 33-item bibliography (1931-84) and a list of suppliers of subject-related equipment.

**150** *** PN-AAT-659**
**MF $2.16/PC $13.39**

### Annotated bibliography on development and transfer of agricultural technology : volume 1

Johnson, Jane
University of Illinois at Urbana-Champaign. College of Agriculture. Office of International Agriculture. International Program for Agricultural Knowledge Systems; U.S. Agency for International Development. Bureau for Science and Technology. Office of Agriculture
Aug 1985, 97p. : En
9364148
DAN-4148-A-00-4004
** Single copies may be obtained by writing to: INTERPAKS, Office of International Agriculture, University of Illinois, 113 Mumford Hall, 1301 West Gregory Drive, Urbana, IL 61801 USA*

The development and transfer of improved technology to farmers is a critical factor in agricultural development, but in many developing countries the process is poorly understood and in need of reassessment. This document presents an annotated bibliography of 271 items in areas related to these issues; most date from 1975 onwards, but a few older citations which have become classics are included. The bibliography is divided into five sections: (1) General Agricultural Development; (2) Policy and Planning; (3) Technology Development; (3) Technology Transfer; and (5) Technology Utilization. In the first section, most documents cited deal with agricultural development or systems in an integrated way, linking issues of policy, research, transfer, and utilization; a smaller number deal with a particular issue. Policy and planning as related to national technology systems are discussed in the second section, while the remaining three sections deal with the various functional activities within the systems and the interrelationships among them. Author, title, and subject indexes are included.

# SUBJECT AND GEOGRAPHIC INDEX

Absorbency 046
Abstracts 059, 078
Access to education 143
Administrative occupations 012
Africa 039, 040, 045, 058, 065, 076, 114, 130, 137
Africa south of Sahara 017, 037
Agribusiness 040, 043, 044, 135
Agricultural aspects 122
Agricultural colleges 144
Agricultural cooperatives 022, 043, 050
Agricultural credit 022, 023, 025, 026, 045, 150
Agricultural development 023, 042, 050, 056, 058, 060, 150
Agricultural education 144
Agricultural enterprises 044
Agricultural equipment 145
Agricultural extension 071, 073
Agricultural extension agents 064
Agricultural extension training 086
Agricultural inputs 025, 026, 045
Agricultural laborers 061
Agricultural markets 066, 087
Agricultural planning 150
Agricultural policy 150
Agricultural product marketing 026, 045
Agricultural production 066, 069
Agricultural production management 050
Agricultural research 027, 046, 047, 049, 052, 058, 061, 062, 065, 068 072, 150
Agricultural surveys 054
Agricultural technology 048, 061, 088, 150
Agricultural training 055
Agricultural water management 073
Agroforestry 0 6, 127, 130
Agronomy 072
Alternative energy technology 139
Animal husbandry 077
Applied research 048, 143
Appropriate technology 025, 075, 147, 148, 149
Aquaculture 080
Aquaculture facilities 082
Aquatic resources 125
Argentina 069, 147
Arid soils 067
Arid zone 057
Asia 045, 130
Associations 074
Audiovisual educational materials 141
Australia 126
Bangladesh 019, 075
Beans 065
Beverages 087
Biogeography 072
Biotechnology 053
Botany 067
Brackish water 080, 084
Brazil 139
Burkina Faso 069
Business enterprises 010, 145
Business formation 018
Caribbean 011, 062, 136
Case studies 035, 039, 131
Cash crops 091
Cement 149
Central America 136
Cereals 122
Change agents 074
Child health care 099, 100
Child mortality 100
Chile 069
Coasts 125
Colombia 069
Commercial credit 020
Commodity import programs 003
Communication channels 073
Community leadership 074
Community participation 09[illegible]
Computer software 146
Conferences 126
Construction engineering 149
Construction equipment 149
Construction materials 149
Contraceptive agents and devices 107, 109
Contraceptive prevalence survey 107
Cooperation 074
Cooperatives 010, 019
Corporations 043
Cost benefit analysis 027
Costa Rica 030, 039
Credit cooperatives 020, 022
Credit unions 022
Crop diseases 064
Crop yield 047, 057
Cropping systems 072
Crops 072, 130
Cultivars 061
Curriculum 103
Cyprus 139
Data bases 146
Data collection 048, 054, 101
Debt repayment 115
Defaults 115
Deforestation 131
Delivery systems 026, 045
Development administration 001, 015, 090
Development assistance 010, 011, 012, 015, 024, 035, 129, 131
Development cooperation 090
Development economics 033
Development finance 013, 031
Development organizations 011, 042, 122
Development planning 014
Development policy 024
Development program design 013
Development program evaluation 003
Development project design 001, 005, 026, 040, 130
Development project evaluation 006, 040, 148
Development project implementation 001, 073, 113
Development project management 004, 005, 113
Development project planning 113
Development strategies 015, 024, 029, 034, 058, 060, 076, 083, 105, 120 123, 129, 137
Diarrhea 097, 099, 106
Disaster management 119
Disaster planning 009, 119
Disaster prediction 009
Disaster preparedness 009, 117, 119, 122
Disaster relief 009, 118, 119, 122
Disaster response 119
Disaster vulnerability analysis 117, 119
Disease prevention and control 100, 106
Disease transmission 106
Disease treatment 097
Dominican Republic 023, 030, 039, 143
Drought 118, 122
Drying 086
East Africa 081, 120
Ecological balance 060
Ecology 072
Economic analysis 032, 033, 115
Economic aspects 018, 075, 127
Economic conditions 025
Economic demographic interaction 112
Economic development 021, 032, 033, 034, 036, 114, 150
Economic growth 007, 034, 112
Economic impact 003
Economic infrastructure 122
Economic integration 018
Economic policy 033, 034
Economic self sufficiency 019
Economic stabilization 033
Economic, social, and cultural rights 130
Economists 033
Ecosystems 123, 125
Ecuador 029, 051
Education for development 140
Education research 143
Educational costs 111
Educational methods 142, 143
Egypt 028, 030, 039, 073, 074, 146
El Salvador 117, 121
Electric power 037
Electrification 133
Emergency food distribution 118
Emergency relief 118
Employment 019
Energy conservation 134, 136
Energy consumption 135, 138
Energy costs 135
Energy needs 135
Energy policy 135, 138, 139
Energy resource development 137
Enrollment 085
Entrepreneurs 002, 029, 030
Environmental degradation 121, 123
Environmental management 060
Environmental protection 125
Environmental quality 123
Erosion control 071, 126, 132
Ethiopia 072
Evaluation methodology 003, 006, 093, 148
Export diversification 051, 087
Export promotion 038, 051
Exports 038, 051
Family planning 089
Family planning behavior 107
Family planning education 089, 111
Family planning services 107, 108
Farm income 091
Farmer training 071, 092
Farmers 022, 025, 073, 074
Farming systems research 048, 054, 059, 091
Fertility 017
Fertilizer raw materials 070
Fertilizer technologies 068
Fertilizers 069, 070, 080
Financial incentives 134
Financial institutions 025, 031
Financial management 025
Financial resources 134
Financing 134
Firewood 126, 131
Fiscal policy 032, 034
Fish culture 080, 084
Fish ponds 080
Fisheries 081
Fishery development 082, 083
Fishery management 083
Fishing industry 083
Food aid programs 090, 093, 094
Food consumption 061 091, 092
Food contamination 106
Food crops 057
Food for Peace 094
Food marketing 087, 122
Food processing 086
Food processing technology 092
Food production 042, 082, 091, 092, 131
Forage crops 063, 079
Forage legumes 079
Foreign assistance 007, 009
Foreign exchange 003
Foreign investment 134
Forest products 128
Forest resource depletion 131, 132
Forest resources 126, 128
Forestry 126, 128, 129, 132
Forests 131, 132
Freshwater fish 084
Fruit 051
Gambia 069, 092
Genetic resource conservation 063, 079
Germplasm 063, 079
Ghana 119
Goats 077

# SUBJECT AND GEOGRAPHIC INDEX

Government policy 009, 010, 013, 021, 025, 105, 114
Graduate education 140
Grasslands 078
Grazing land 004, 078
Groundwater 075
Guatemala 123
Haiti 011, 135
Health delivery 096
Health education 099
Health finance 095, 096, 111
Health policy 096
Health research 101
Health workers 089
Home food preparation 092, 106
Honduras 043, 052, 104
Host country cooperation 013, 044, 115
Housing credit 115
Housing finance 116
Housing investment guaranty 115
Housing planning 116
Human nutrition 093
Humid zone 077
Hydroelectric power 133
Hygiene 106
Impact assessment 001, 006, 088, 093
Imports 003
Incentives 139
Income level 138
India 068, 069, 139, 147
Indigenization 014, 109
Indonesia 069, 082, 107, 111, 125, 145
Industrial facilities 136
Infant mortality 017
Informal sector 021, 030
information management 146
Information needs 124, 146
Information networking 090
Information storage and retrieval system 146
Institution building 004, 015, 022, 031, 098, 113, 140
Institutional aspects 123
Integrated rural development 113
Interdisciplinary research 073
Internal migrations 118
International organizations 144
International trade 070, 087
Investors 115, 134
Irrigated farming 076
Irrigation 075, 076
Irrigation system construction 075
Joint ventures 043
Jojoba oil 067
Kenya 030, 039, 087, 141, 142, 143, 147
Knowledge attitudes and practice survey 107
Korea Republic of 007
Labor 091
Land management 004
Land resources 120
Land tenure 130
Landslopes 132
Language training 141, 142
Latin America 045, 049, 062, 089, 096, 130
Laws and legislation 094
Leadership training 074
Learning readiness 085
Legal research 130
Lesotho 004
Level of education 017
Literacy 017
Littoral zones 125
Livestock 004
Loans 115
Local groups 004, 050
Local level 025, 098
Low income 042
Maize 092
Management development 012, 015, 029
Management education 140
Management methods 008, 012
Manufactured products 028
Manufacturing 109, 135, 145
Marine fisheries 083
Markets 070
Mass communication 142
Mass media 099
Maternal child health care 089, 095, 108
Measuremant and detection 054
Medium scale enterprises 024
Mexico 052
Middle East 045
Milkfish 080
Millet 052
Morocco 083
Municipal level 037
Natural resource conservation 060, 121, 131
Natural resource development 125
Natural resource inventories 121
Natural resource management 120, 121, 124, 125
Natural resource rehabilitation 121
Natural resources 123
Nicaragua 020, 143
Niger 118, 122
Nigeria 048, 077, 097
Nitrogen fertilizers 068
Nitrogen fixation 126
Nonproject assistance 003
North Africa 057
Nutrition education 089
Nutrition improvement 092
Nutrition research 085
Nutritional status 085
Nutritional value analysis 066
Nutritionist education 089
Oceania 126
Official documents 094
Oil crops 067
On farm research 048, 057
On farm water management 071
Oral rehydration therapy 097, 099, 106
Overfishing 083
Paramedical education 108
Paramedical midwives 108
Personnel development 102
Peru 071
Pest control 055
Pesticides 055
Petroleum 138
Philippines 080, 086, 139
Phosphate fertilizers 068
Plant disease manifestations 064
Plant nutrition 072
Policy dialogue 035
Policy making 013, 035, 110
Political aspects 035
Polymers 046
Ponds 082
Poor 042, 061
Popular participation 074
Population characteristics 017
Population density 120
Population economics 111
Population growth 112, 122
Population planning 110
Population policy 110
Population programs 110, 111
Post harvest food losses 088
Potash fertilizers 068
Potatoes 047, 066, 088
Price regulation 034, 138
Prices 138
Primary education 142, 143
Primary health care 095, 098
Private enterprises 024, 035, 043, 128, 134
Private sector 010, 022, 024, 026, 028, 033, 035, 037, 044, 115, 136
Private voluntary organizations 002, 011, 012
Privatization 036, 037
Product development 067
Production management 109
Project sustainability 004, 005, 014
Public expenditures 095, 111
Public finance 032
Public sector 022, 024, 026, 044
Public services 037
Publications 102
Radio 141, 142, 143
Rangeland 004
Reference materials 094, 102, 150
Reference services 094
Reforestation 126
Refugee relief 118
Refugees 118
Regional development 083, 114
Renewable energy resources 139
Reports 094
Research centers 062, 144
Research collaboration 079
Research design 085
Research management 027
Research methodology 085, 101, 124
Research organizations 049, 057, 062
Research planning 027
Research priorities 101
Return on investments 134
Rhizobium 053
Road transportation 138
Rural areas 001, 042, 095, 105, 133, 143
Rural development 005, 014, 031, 102, 114, 150
Rural urban linkages 114
Saline water 084
Salt 082
Sanitation 102, 105
Sanitation education 106
Sanitation engineering 104
School attendance 085
School feeding programs 085
Seasonal variations 091
Sector evaluation 076, 116
Sector policy 127
Seed production 041, 044, 047
Seeds 041
Semiarid zone 079
Senegal 108
Sewage system construction 104
Sheep 077
Shrimp farming 082
Small farms 022, 023, 042, 053, 091
Small ruminants 077
Small scale enterprises 002, 006, 018, 019, 021, 024, 028, 029, 030, 039 145
Social benefits 075
Socioeconomic aspects 022, 127
Socioeconomic status 017
Soil analysis 149
Soil conservation 071
Soil erosion 132
Soil fertility 068
Soil inoculation 053
Soil moisture 046
Soil research 072
Soil stabilization 132, 149
Soil types 149
Solar energy 086
Sorghum 052, 068
South America 136
Soybeans 053
Spring capping 103
Springs (water) 103
Sri Lanka 088, 116
Staple foods 091
Statistical data 127
Street vendors 020
Student performance 085
Subsidies 069
Subsistence farming 054, 091
Sudan 052

# SUBJECT AND GEOGRAPHIC INDEX

Survey methodology 054
Systems analysis 124
Tanzania 041, 095, 147
Tax incentives 034
Tax rates 034
Taxation 032, 034
Teacher education 140
Teacher training 055
Teachers' manuals 055
Technical assistance 008, 137
Technical information 146
Technical training 019, 103, 133
Technological innovations 046, 061
Technology adoption 061, 088
Technology applications 046, 147
Technology transfer 015, 044, 109, 140, 145, 150
Telecommunications technology 037
Thailand 044, 053, 147
Tilapia 084
Trade regulation 034
Transportation 037, 138
Transportation policy 138
Trees 126, 130
Tropical fruits 086
Tropical zone 078, 131
Tube wells 075
Tunisia 038, 047, 140
Universities and colleges 140
Unpublished documents 094
Urban areas 037, 039
Urban development 114
Varietal research 048, 061
Vegetables 051, 086
Vehicles 138
Viral diseases 064
Viruses 064
Water contamination 106
Water management 016, 075, 104
Water resources 120
Water sanitation 016, 102, 104, 106
Water supply 037, 102, 104, 105
Water supply engineering 103, 104
Water supply structure maintenance 104
Watersheds 124, 131
West Africa 057, 077, 083
Women in development 016, 017, 018, 019, 020, 021, 092
Workshops 103
Yield increase 061, 080
Zaire 005, 056, 105

# AUTHOR AND INSTITUTION INDEX

Academy for Educational Development, Inc.  099, 142
ACCION International. AITEC Division  030, 039
Appropriate Technology International  053, 147, 148
Araujo, Frank  023
Ashe, Jeffrey  030
Ashraf, M.  048
Asian Vegetable Research and Development Center  064
Auburn University. Alabama Agricultural Experiment Station  054
Balogun, P.  048
Bangladesh Agricultural Research Council  075
Bartlett, Bruce  034
Bear, Marshall  053
Bendick, Marc, Jr.  114
Berger, Brigitte  021
Berry, Albert  029
Beyene, Desta  072
Biddle, C. Stark  012
Borlaug, Norman E.  129
Brainerd, Theophilus R.  081
Bremer, Jennifer  024
Brick, Steve  130
Brown, Larry  044
Bruce, John  130
Bruce, Judith  020
Buckley, Robert  116
Buckley, Robert M.  115
Burbridge, Peter W.  125
Bush, Alfred  149
Butterfield, Samuel H.  129
Cairns, Gail S.  110
Camp Dresser and McKee, Inc.  103, 104, 105, 106
Canada. International Development Agency  090
Cassaday, K.  077
Casstevens, Thomas W.  140
Chao, Dennis N.W.  111
Chen, Marty  019
Chong, Kee-Chai  080
Chuang, Yao H.  070
Clark University. International Development Program  120
Cole, Elizabeth  024
Colorado State University  092
Colorado State University. Engineering Research Center  073, 074
Columbia University. Center for Population and Family Health. Development Law and Policy Program  110
Columbia University. Teachers College. Horace Mann - Lincoln Institute  085
Consortium for International Crop Protection  055
Consortium for International Development  073, 074, 076, 092
Consultative Group on International Agricultural Research  061
Corl, Thomas C.  148
Cornell University. Center for International Studies. Rural Development Committee  050, 098
Curry, Robert L., Jr.  032
Daugherty, Howard  121
Davies, W. Ellis  063
Davis, Cynthia  119
Delp, Peter  145
Development Alternatives, Inc.  006, 014, 051, 113
Development Associates, Inc.  001, 003, 089
Doan, Rebecca Miles  098
Donaldson, David  104
Dunkerley, Joy  138
Dunlop, David W.  095
Dutrow, George F.  128
East - West Center. East - West Environment and Policy Institute  124, 132
Easter, K. William  124
Egan, Mary Lou  114
Egypt. Academy of Scientific Research and Technology. National Information and Documentation Centre  146
Egypt. Ministry of Irrigation. Water Distribution Research Institute. Water Research Center  073, 074
EMTECSA de C.V.  121
European Community. Development Directorate - General of the European Commission  090
Evaluation Technologies, Inc.  117, 119, 122
Evison, Laura  108
Fano, Hugo  066
Finin, Gerard  098
Frankenberger, Timothy R.  091
Free, Michael J.  109
Freeman, Peter H.  060
Fricke, Thomas  147
Garcia, Luis E.  123
Georgia Institute of Technology  146
Gibbons, Lillian K.  101
Goff, David  103
Goldmark, Susan  006, 038
Gormley, Wilma  103
Granovsky, T.A.  055
Green, S.K.  064
Hagler, Bailly and Co.  134, 135, 136
Hannah, John P.  014
Haque, I.  072
Harmon, David  038
Harris, Gene T.  069
Harrison, Polly F.  096
Harvard University. Institute for International Development  038
Hendrix, Melvin K.  081
Hermann, Chris  013
Hoch, Irving  138
Hoffmann, Thomas  139
Honadle, George  004, 014, 113
Hopkins, Raymond F.  090
Horton, D.  047
Horton, Douglas E.  066
Howe, Gary N.  028
Howell, H.N., Jr.  055
Hoyt, Kenneth D.  086
Hufschmidt, Maynard M.  124
Hunt, Robert W.  002
Hyman, Eric L.  148
Imhoof, Maurice  141, 142
Indonesia. National Family Planning Coordinating Board  107
Inter-American Development Bank  062
International Agricultural Development Service  075
International Center for Agricultural Research in the Dry Areas  057
International Center for Living Aquatic Resources Management  080, 084
International Center for Tropical Agriculture  065, 078
International Council for Research in Agroforestry  130
International Crops Research Institute for the Semi-Arid Tropics  068
International Fertilizer Development Center  069, 070
International Food Policy Research Institute  087, 090, 093
International Institute for Environment and Development  060, 125, 139
International Institute of Tropical Agriculture  048
International Livestock Centre for Africa  072, 077
International Maize and Wheat Improvement Center  027, 062
International Potato Center  047, 066, 088
International Rice Research Institute  144
International Science and Technology Institute, Inc.  108
International Service for National Agricultural Research  049
International Trade and Development Education Foundation  094
Isaacs, Stephen L.  110
Isely, Raymond B.  106
Jackson, Leroy  005
Jatiputra, Sujana  107
Jenkins, Jerry  021
Jepson, Lance  118
Johnson, Jane  150
Johnson, Nancy C.  140
Johnson, Sam H. III  075
Kakis, Jack  051
Kanwar, J.S.  068
Keene, Monk and Associates  034
Kettering, Merlyn  008
Kilmer, Gary  051
Kochman, Jane  117
Kotellos, Katherine A.  025
Kuo, Ching-Ming  084
Laarman, Jan G.  128
Lapham, Robert J.  101
Lemmerhofer, Carlos  123
Levinger, Beryl  085
Lieberson, Joseph M.  025
Lipton, Michael  061
Lizarondo, Maura S.  080
Lofredo, Gino  029
Longhurst, Richard  061
Lopez S., Jorge  065
Mahoney, Richard T.  109
Management Sciences for Health  096, 097
Mango, Cecily L.  119
Maragos, James E.  125
Marceau, Ian W.  037
Marlett, Melanie  092
Maugle, Paul D.  082
Mayfield, James B.  073, 074
McCommon, Carolyn M.  043
Meyer, Richard L.  031
Meyers, L. Richard  041
Monares, A.  047
Mooney, Timothy J.  040
Moran, Joaquin Alonso Guevara  121
Moris, Jon R.  076
Muscat, Robert J.  035
Naguib, Mohamed  073, 074
National Academy of Sciences. National Research Council. Commission on Behavioral and Social Sciences and Education. Committee on Population and Demography  112
National Academy of Sciences. National Research Council. Office of International Affairs. Board on Science and Technology for International Development  067, 126
National Rural Electric Cooperative Association  133
Newman, Jeanne S.  017
O'Loughlin, Colin L.  132
Ohio State University. Dept. of Agricultural Economics and Rural Sociology  031
Partnership for Productivity International  029
Peru. Ministry of Agriculture  071
Philippines. Bureau of Fisheries and Aquatic Resources  080
Philippines. Ministry of Agriculture. Bureau of Agricultural Economics  080
Pineiro, M.  049
Population Council  019, 020
Posner, Gerald S.  063
Pragma Corp.  011, 033
Program for the Introduction and Adaptation of Contraceptive Technology  109
Pumfrey, Ross  139
Quick, Jonathan  097
Rabushka, Alvin  034
Rafael Landivar University. Institute of Environmental Sciences and Agricultural Technology  123
Ratchford, C. Bryce  041
Razak, Vernon  102
Resources for the Future, Inc.  138
Rhoades, Robert E.  088
Robert R. Nathan Associates, Inc.  024
Rondinelli, Dennis A.  015
Rosengard, Jay  006

# AUTHOR AND INSTITUTION INDEX

Rosenthal, Irving 005
Ross, John A. 111
Rubino, Mary M. 122
Rueschhoff, Norlin G. 043
Sahn, David C93
Sambou, Marie 092
Schluter, Michael 087
Schmidt, Terry 008
Scobie, Grant M. 027
Sequoia Institute 021
Shapiro, Kenneth H. 127
Sinding, Monica K. 145
Slamecka, Vladimir 146
Slavics, John J. 053
Smith, Alice J. 016
Smith, Sally S. 089
Solem, Ray 026
Solem, Richard Ray 022
Stallings, James L. 054
Steinberg, David I. 007
Streicher, Alain 135
Struyk, Raymond 116
Struyk, Raymond J. 115
Sumberg, J.E. 077
Sutinen, Jon 083
Swanson, Marilyn A. 086
Taiwan. Council for Agricultural Planning and Development 084
Tandon, H.L.S. 068
Taylor, Peter Leigh 045
Teetes, George L. 052
Thom, Derrick J. 076
Thomson, James T. 105
Tippet, Bruce A. 022
Trigo, E. 049
U.N. Food and Agriculture Organization 080
U.N. Food and Agriculture Organization. International Board for Plant Genetic Resources 063, 079
U.S. Agency for International Development 036, 100
  Advisory Committee on Voluntary Foreign Aid 011, 018
  Bureau for Africa 058, 137
  Bureau for Africa. Gambia 092
  Bureau for Africa. Niger 118
  Bureau for Africa. Office of Regional Affairs 054, 083
  Bureau for Africa. Zaire 105
  Bureau for Asia and Near East. Indonesia 111
  Bureau for Asia and Near East. Tunisia 038
  Bureau for Asia. Bangladesh 075
  Bureau for Asia. Indonesia 107
  Bureau for Asia. Philippines 086
  Bureau for Food for Peace and Voluntary Assistance. Office of Private and Voluntary Cooperation 002, 012, 109
  Bureau for Food for Peace and Voluntary Assistance. Office of Program Policy and Evaluation 085
  Bureau for Latin America and the Caribbean 096
  Bureau for Latin America and the Caribbean. Ecuador 029, 051
  Bureau for Latin America and the Caribbean. El Salvador 121
  Bureau for Latin America and the Caribbean. Haiti 076
  Bureau for Latin America and the Caribbean. Honduras 104
  Bureau for Latin America and the Caribbean. Peru 071
  Bureau for Latin America and the Caribbean. Regional Office for Central American Programs 21 123
  Bureau for Near East. Egypt 073, 074, 146
  Bureau for Near East. Office of Technical Support 028
  Bureau for Private Enterprise. Office of Housing and Urban Programs 21 114, 115, 116
  Bureau for Program and Policy Coordination 009, 010, 021, 041
  Bureau for Program and Policy Coordination. Center for Development Information and Evaluation 001, 004, 005, 013, 023, 024, 042, 043, 044, 140, 145
  Bureau for Program and Policy Coordination. Office of Economic Affairs 21 033, 034
  Bureau for Program and Policy Coordination. Office of Evaluation 003, 007 022, 025, 026, 045, 095
  Bureau for Program and Policy Coordination. Office of Planning and Budgeting 21 032
  Bureau for Program and Policy Coordination. Office of Policy Development and Program Review 037, 127
  Bureau for Program and Policy Coordination. Office of Women in Development 017 019, 020
  Bureau for Science and Technology 041
  Bureau for Science and Technology. Office of Agriculture 048, 049, 052 055, 057, 058, 059, 061, 62, 063, 066, 068, 069, 070, 072, 076, 077, 078, 079 080, 081, 082, 084, 088, 090, 093, 124, 144, 150
  Bureau for Science and Technology. Office of Education 099, 141, 142, 143
  Bureau for Science and Technology. Office of Energy 133, 134, 135 136, 138, 139
  Bureau for Science and Technology. Office of Forestry, Environment and Natural Resources 046, 060, 120, 125, 128, 129
  Bureau for Science and Technology. Office of Health 016, 097, 099, 101 102, 103, 104, 105, 106
  Bureau for Science and Technology. Office of Multisectoral Development 008
  Bureau for Science and Technology. Office of Nutrition 091
  Bureau for Science and Technology. Office of Population 107, 108, 110, 112
  Bureau for Science and Technology. Office of Rural and Institutional Development 006, 014, 030, 038, 039, 040, 050, 053, 059, 098, 113
  Bureau for Science and Technology. Office of Rural Development and Development Administration 130
  Bureau for Science and Technology. Office of Technical Review and Information 082
  Office of the Science Advisor 067
  Office of U.S. Foreign Disaster Assistance 117, 119, 122
U.S. Dept. of Agriculture. Forest Service 128
  Office of International Cooperation and Development. Development Project Management Center 008
  Office of International Cooperation and Development. Technical Assistance Division. Nutrition Economics Group 091
U.S. Dept. of Commerce. Bureau of the Census. Center for International Research 017
U.S. Dept. of the Interior. National Park Service 120
U.S. President's Task Force on International Private Enterprise 035
U.S. Presidential Agricultural Task Force to Zaire 056
Underwood, Wayne 044
University of Florida. Institute of Food and Agricultural Sciences 059
University of Idaho. Postharvest Institute for Perishables 086
University of Illinois at Urbana–Champaign. College of Agriculture. Office of International Agriculture International Program for Agricultural Knowledge Systems 150
University of Indonesia. Faculty of Public Health 107
University of Michigan. Center for Research on Economic Development 127
University of Nairobi. Institute for Development Studies 087
University of Nebraska, Lincoln. Institute of Agriculture and Natural Resources 052
University of Notre Dame. Kellogg Institute for International Studies 043
University of Rhode Island. International Center for Marine Resource Development 081, 082
University of Wisconsin, Madison. Land Tenure Center 130
Uphoff, Norman 050
Urban Institute 114, 115, 116
Utah State University. Dept. of Agricultural and Irrigation Engineering 076
Utomo, Budi 107
Van Dusen, Katy 050
VanSant, Jerry 113
Vigil, Rudy 118
Visayas State College of Agriculture. Root Crop Research and Training Center 086
Viveros–Long, Ana Maria 023
Volunteers in Technical Assistance, Inc. 149
Warren, Marion 004
Watanabe, Wade O. 084
Weber, Fred R. 105
West, Patrick 127
Westinghouse Health Systems, Inc. 107
Wilcock, David 026
Winn, Judy F. 052
World Bank 061
World Resources Institute 131

# CONTRACT/GRANT INDEX

Item No.
518-0019-G-00-4119-00 .... 051
519-0167-C-00-2039-00 .... 121
596-0000-C-00-3060-00 .... 123
AID/DSAN-C-0252 .... 055
AID/DSAN-CA-0226 .... 133
AID/DSAN-CA-0265 .... 086
AID/DSAN/XII/G-0149 .... 052
AID/DSPE-C-0023 .... 099
AID/DSPE-C-0051 .... 141, 142
AID/DSPE-C-0080 .... 016, 102, 103, 104
AID/NE-C-1351 .... 073
AID/OTR-C-1828 .... 030, 039
AID/SOD/PDC-C-3345 .... 117, 119, 122
DAN-1096-0-00-5038-00 .... 040
DAN-4127-C-00-2086-00 .... 076
DAN-4127-G-SS-5021-00 .... 124
DAN-4148-A-00-4004 .... 150
DAN-5317-C-00-3085-00 .... 029
DAN-5426-C-00-4098-0 .... 038
DAN-5517-A-00-2066 .... 060, 125
DAN-5538-G-SS-1023-00 .... 067, 126
DAN-5728-A-00-3047-00 .... 053
DAN-5728-C-00-3073-00 .... 134, 136
DPE-0643-C-00-3063-00 .... 110
DPE-0643-G-SS-3068-00 .... 112
DPE-3024-C-00-4063-00 .... 108
DPE-5927-C-00-3083-00 .... 097
DPE-5942-C-00-4085-00 .... 105, 106
DS/OTR-C-0016 .... 006
NEB-0016-C-00-2092-00 .... 146
NEB-150-0-4103-00 .... 028
ORT-0085-0-00-3167-00 .... 095
OTR-0085-0-00-3367-00 .... 043
OTR-0091-C-00-2164-00 .... 127
OTR-0092-0-00-5129-00 .... 037
OTR-0095-0-00-5075-00 .... 032
OTR-0095-C-00-5007-00 .... 033
PASA BAF-0510-P-CC-40 .... 083
PDC-0000-C-00-3119-00 .... 011
PDC-0000-I-22-3077-00 .... 001
PDC-0092-I-03-4047-00 .... 021
PDC-0092-I-04-4045-00 .... 034
PDC-0242-G-SS-3111-00 .... 109
PDC-0250-0-00-4035-00 .... 012
PDC-1406-I-07-4062-00 .... 101
RSSA-BST-1171-R-AG-31 .... 091

# DOCUMENT NUMBER INDEX

| | Item No. |
|---|---|
| PD-AAR-863 | 001 |
| PN-AAL-041 | 022 |
| PN-AAL-042 | 041 |
| PN-AAL-045 | 042 |
| PN-AAL-046 | 043 |
| PN-AAL-047 | 044 |
| PN-AAL-048 | 023 |
| PN-AAL-049 | 024 |
| PN-AAL-050 | 140 |
| PN-AAL-052 | 145 |
| PN-AAL-055 | 002 |
| PN-AAL-058 | 003 |
| PN-AAL-060 | 085 |
| PN-AAL-061 | 004 |
| PN-AAL-063 | 005 |
| PN-AAL-065 | 006 |
| PN-AAL-074 | 025 |
| PN-AAL-075 | 007 |
| PN-AAL-079 | 026 |
| PN-AAP-341 | 086 |
| PN-AAP-464 | 016 |
| PN-AAP-567 | 133 |
| PN-AAP-634 | 102 |
| PN-AAP-637 | 008 |
| PN-AAP-935 | 126 |
| PN-AAQ-164 | 009 |
| PN-AAQ-165 | 010 |
| PN-AAQ-227 | 127 |
| PN-AAQ-307 | 087 |
| PN-AAQ-408 | 045 |
| PN-AAQ-471 | 146 |
| PN-AAQ-510 | 027 |
| PN-AAQ-583 | 088 |
| PN-AAQ-790 | 103 |
| PN-AAQ-683 | 141 |
| PN-AAR-136 | 073 |
| PN-AAR-216 | 104 |
| PN-AAR-217 | 063 |
| PN-AAR-219 | 117 |
| PN-AAR-220 | 118 |
| PN-AAR-318 | 046 |
| PN-AAR-320 | 011 |
| PN-AAR-403 | 074 |
| PN-AAR-514 | 028 |
| PN-AAR-515 | 095 |
| PN-AAR-575 | 064 |
| PN-AAR-760 | 065 |
| PN-AAR-761 | 047 |
| PN-AAR-763 | 068 |
| PN-AAR-795 | 069 |
| PN-AAS-059 | 089 |
| PN-AAS-103 | 017 |
| PN-AAS-104 | 018 |
| PN-AAS-120 | 019 |
| PN-AAS-129 | 113 |
| PN-AAS-132 | 107 |
| PN-AAS-135 | 020 |
| PN-AAS-206 | 128 |
| PN-AAS-272 | 080 |
| PN-AAS-279 | 129 |
| PN-AAS-306 | 048 |
| PN-AAS-315 | 108 |
| PN-AAS-326 | 096 |
| PN-AAS-381 | 142 |
| PN-AAS-442 | 134 |
| PN-AAS-443 | 147 |
| PN-AAS-452 | 148 |
| PN-AAS-457 | 114 |
| PN-AAS-459 | 135 |
| PN-AAS-476 | 136 |
| PN-AAS-492 | 066 |
| PN-AAS-512 | 119 |
| PN-AAS-513 | 105 |
| PN-AAS-544 | 081 |
| PN-AAS-545 | 082 |
| PN-AAS-547 | 097 |
| PN-AAS-549 | 143 |
| PN-AAS-592 | 077 |
| PN-AAS-721 | 029 |
| PN-AAS-732 | 144 |
| PN-AAS-740 | 149 |
| PN-AAS-759 | 030 |
| PN-AAS-815 | 049 |
| PN-AAS-831 | 106 |
| PN-AAS-833 | 050 |
| PN-AAS-834 | 098 |
| PN-AAS-857 | 070 |
| PN-AAS-924 | 090 |
| PN-AAS-927 | 083 |
| PN-AAS-956 | 084 |
| PN-AAS-968 | 012 |
| PN-AAS-987 | 137 |
| PN-AAT-034 | 091 |
| PN-AAT-075 | 120 |
| PN-AAT-159 | 138 |
| PN-AAT-188 | 051 |
| PN-AAT-190 | 121 |
| PN-AAT-196 | 122 |
| PN-AAT-230 | 123 |
| PN-AAT-234 | 067 |
| PN-AAT-239 | 078 |
| PN-AAT-269 | 031 |
| PN-AAT-296 | 109 |
| PN-AAT-311 | 110 |
| PN-AAT-387 | 130 |
| PN-AAT-420 | 075 |
| PN-AAT-512 | 139 |
| PN-AAT-608 | 013 |
| PN-AAT-624 | 032 |
| PN-AAT-653 | 092 |
| PN-AAT-658 | 124 |
| PN-AAT-659 | 150 |
| PN-AAT-686 | 076 |
| PN-AAT-693 | 052 |
| PN-AAT-771 | 033 |
| PN-AAT-772 | 053 |
| PN-AAT-780 | 034 |
| PN-AAT-803 | 071 |
| PN-AAT-834 | 054 |
| PN-AAT-837 | 055 |
| PN-AAT-879 | 079 |
| PN-AAT-972 | 131 |
| PN-AAT-984 | 056 |
| PN-AAT-990 | 021 |
| PN-AAU-015 | 111 |
| PN-AAU-030 | 099 |
| PN-AAU-040 | 057 |
| PN-AAU-138 | 035 |
| PN-AAU-140 | 058 |
| PN-AAU-145 | 059 |
| PN-AAU-190 | 072 |
| PN-AAU-217 | 060 |
| PN-AAU-219 | 125 |
| PN-AAU-229 | 093 |
| PN-AAU-231 | 132 |
| PN-AAU-286 | 036 |
| PN-AAU-349 | 061 |
| PN-AAU-372 | 094 |
| PN-AAU-373 | 100 |
| PN-AAU-377 | 037 |
| PN-AAU-378 | 101 |
| PN-AAU-381 | 062 |
| PN-AAU-400 | 014 |
| PN-AAU-425 | 115 |
| PN-AAU-429 | 116 |
| PN-AAU-430 | 112 |
| PN-AAU-439 | 038 |
| PN-AAU-440 | 039 |
| PN-AAU-590 | 040 |
| PN-AAU-651 | 015 |

BEST COPY AVAILABLE

# ORDERING INSTRUCTIONS

## TO ORDER:

A **Send all orders to:** AID/DIHF/*ARDA*, 7222 47th Street Chevy Chase MD 20815 U S A

B **Please note the following definitions in placing your order:**

| | | |
|---|---|---|
| 1. DOCUMENT NUMBER | Found at the top of each abstract, begins with "PN" | Example: PN-AAJ-875 |
| 2. PRICE | Prices for single paper (PC) and microfiche (MF) copies of documents are found directly below the document number Microfiche are 105 x 148 mm, 98 frame @ 24x reduction | Example: MF $1.08/PC $7.67 |

**Microfiche use is encouraged Save paper and mailing costs!**

C **Please note the following categories of customers:**

1 **A.I.D. employees, A.I.D. contractors overseas, and AID-sponsered organizations overseas** may receive microfiche and/or paper copies of *ARDA* documents free. Employees of A.I.D. contractors in the U.S. may receive free copies only when order is accompanied by A.I.D. project officer's certification that requested material is relevant to project.

2 **Universities, research centers, government offices, and other institutions located in developing countries** may receive free microfiche copies of up to five titles per *ARDA* issue. Paper copies of *ARDA* may be purchased at the stated price.

3 **All other institutions and individuals** may purchase microfiche and/or paper copies of *ARDA* documents at the stated prices. When ordering, include document number.

**PLEASE INDICATE YOUR PREFERENCE FOR PAPER OR MICROFICHE COPIES OF *ARDA* DOCUMENTS. SEND NO PAYMENT! WHERE APPLICABLE, YOU WILL BE BILLED FOR THE APPROPRIATE DOCUMENT COST AND POSTAL CHARGES.**

## POUR COMMANDER:

A **Envoyer les commandes a:** AID/DIHF/*ARDA*, 7222 47th Street Chevy Chase MD 20815 U S A

B **Veuillez tenir compte des definitions suivantes en commandant:**

| | | |
|---|---|---|
| 1. NUMERO DE DOCUMENT | Ce numero parait au-dessus de chaque resume commencez avec "PN" | Exemple: PN-AAJ-875 |
| 2. PRIX | Les prix pour des copies en papier (PC) et/ou en microfiche (MF) paraissent au-dessus de chaque resume. Les dimensions de la microfiche sont 105 x 148 mm, 98 feuilles par fiche reduction 24x | Exemple: MF $1.08/PC $7.67 |

**On est bien encourage de commander des microfiches pour eviter les frais de papier et de poste!**

C **Verifier bien les categories suivantes de clients:**

1 **Des employes d'A.I.D., des entrepreneurs qui traivaillent pour A.I.D. a l'etranger, et des employes d'agences volontaires a l'etranger** peuvent recevoir gratuitement les documents d'*ARDA* en papier et/ou en microfiche. Des entrepreneurs qui travaillent pour A.I.D. auz Etats-Unis ne peuvent recevoir gratuitement les documents d'*ARDA* que si la commande est accompagnée par l'assurance du responsable du projet d'A.I.D. que les documents commandes se rapportent au projet.

2 **Des universites, des centres de recherches, des bureaux de gouvernement, et d'autres institutions aux pays en voie de développement** puevent recevoir gratuitement jusqu'a cinq documents d'*ARDA* en microfiche. On peut acheter les documents en papier au prix donne.

3 **D'autres institutions et individus** peuvent acheter les documents d'*ARDA* en papier ou en microfiche au prix donné. En commandant veuillez inclure le numéro de document.

**VEUILLEZ INDIQUER VOTRE PREFERENCE DE FORMAT (PAPIER OU MICROFICHE) DES DOCUMENTS D'*ARDA*. PRIERE DE NE PAS ENVOYER DE PAIEMENT! ON ENVERRA UNE FACTURE DETAILLANT LES PRIX DES DOCUMENTS ET LES FRAIS DE POSTE.**

## PARA PEDIR COPIAS:

A **Envíe los formularios a:** AID/DIHF/*ARDA*, 7222 47th Street Chevy Chase MD 20815 U S A

B **Por favor, verifique las siguientes definiciones al pedir las copias:**

| | | |
|---|---|---|
| 1. NÚMERO DEL DOCUMENTO | Se encuentra arriba de cada resumen se comienza con "PN" | Ejemplo: PN-AAJ-875 |
| 2. PRECIO | Los precios de las copias individuales en papel (PC) y en microficha (MF) se encuentran abajo del numero del documento. Las medidas de las microfichas son 105 mm x 148 mm, 98 cuadro @ 24x reducción | Ejemplo: MF $1.08/PC $7.67 |

**¡Se recomienda el uso de las microfichas! Conserve los costos de papel y de correo!**

C **Por favor, verifique las siguientes categorías de los solicitantes:**

1 **Los empleados de A.I.D., los contrafistas extranjeros de A.I.D., y las organizaciones extranjeras apolladas por A.I.D.** pueden recibir gratis las copias en microficha y/o en papel de los documentos de *ARDA*. Los empleados de los contratistas de A.I.D. dentro de los E.U. pueden recibir las copias gratis siempre que sus pedidos sean acompanados por una certificación del dirigente del proyecto de A.I.D. la cual constate que los documentos son relacionados al proyecto.

2 **Las universidades, los centros de investigaciones, las oficinas de gobierno, y las otras instituciones en los paises en desarrollo** pueden reciber gratis hasta cinco copias en microficha de los documentos presentados en *ARDA*. Las copias en papel se pueden comprar al precio estipulado.

3 **Todas las demás institutiones y particulares** pueden comprar las copias en microficha y/o en papel de los documentos de *ARDA* a los precios estipulados. Al solicitar, se debe incluir el numero del documento y el titulo del documento.

**POR FAVOR, INDIQUE QUAL ES SU PREFERENCIA, QUE SEA OBTENER LAS COPIAS EN PAPEL O EN MICROFICHA DE LOS DOCUMENTOS DE *ARDA*. ¡NO HAY QUE REMITIR EL PAGO! CUANDO LE CORRESPONDA, USTED SERÁ FACTURADO POR EL COSTO APROPRIADO DE LOS DOCUMENTOS SOLICITADOS MÁS EL COSTO DEL CORREO.**

# ORDER FORM

**Date of order** ______________

Name ______________________________
Title/office ______________________________
Institution ______________________________
Room number ______________________________
Building ______________________________
Street ______________________________
City ______________________________
Country ______________________________
Postal code ______________________________

| Document number: | Paper Copy (PC)<br>Microfiche (MF) | Quantity |
|---|---|---|
| 1 ☐☐-☐☐☐-☐☐☐ | PC | ______ |
| Title ______________________ | MF | ______ |
| 2 ☐☐-☐☐☐-☐☐☐ | PC | ______ |
| Title ______________________ | MF | ______ |
| 3 ☐☐-☐☐☐-☐☐☐ | PC | ______ |
| Title ______________________ | MF | ______ |
| 4 ☐☐-☐☐☐-☐☐☐ | PC | ______ |
| Title ______________________ | MF | ______ |
| 5 ☐☐-☐☐☐-☐☐☐ | PC | ______ |
| Title ______________________ | MF | ______ |
| 6 ☐☐-☐☐☐-☐☐☐ | PC | ______ |
| Title ______________________ | MF | ______ |
| 7 ☐☐-☐☐☐-☐☐☐ | PC | ______ |
| Title ______________________ | MF | ______ |
| 8 ☐☐-☐☐☐-☐☐☐ | PC | ______ |
| Title ______________________ | MF | ______ |

**Send orders to:**

**AID/DIHF/ARDA**
**7222 47th Street**
**Chevy Chase, MD 20815**

**ENCLOSE NO PAYMENT.**
**You will be invoiced later.**